1/71

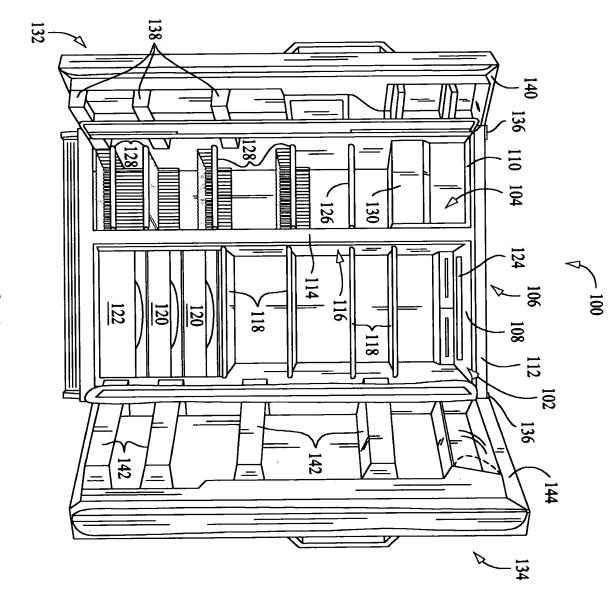


FIG. 1

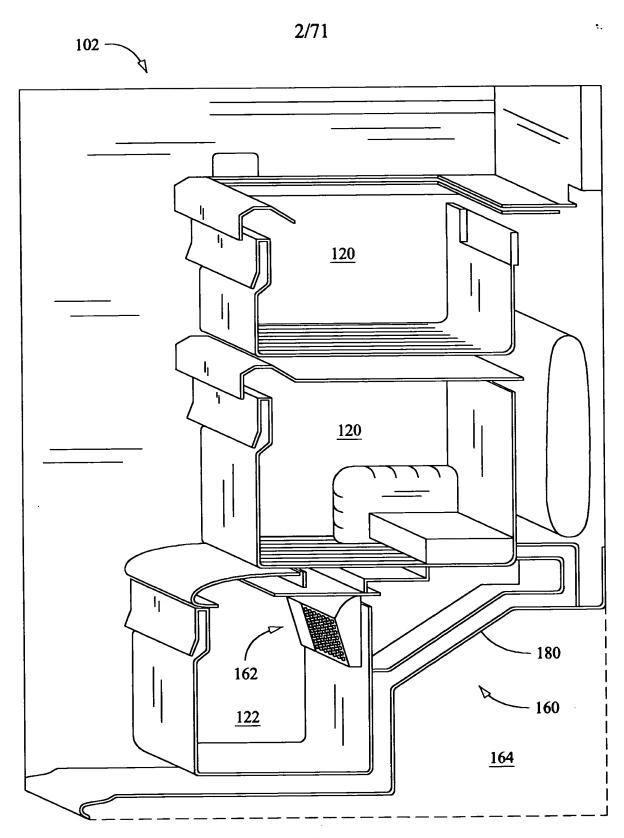
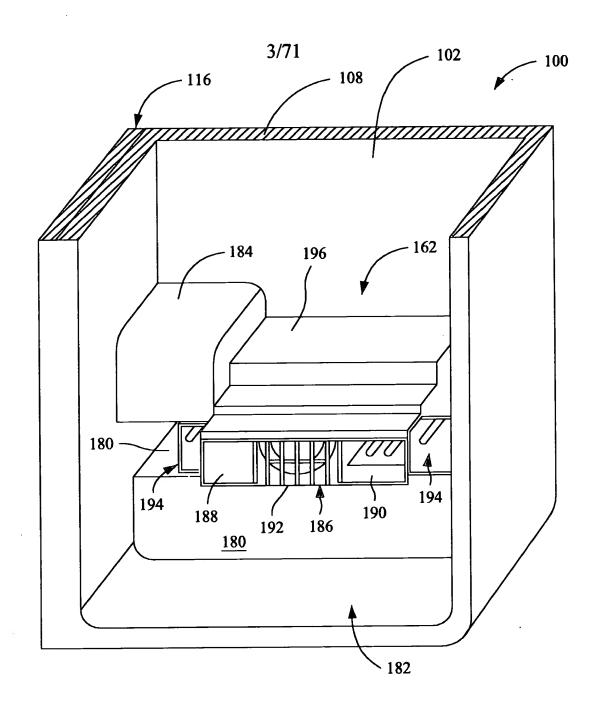
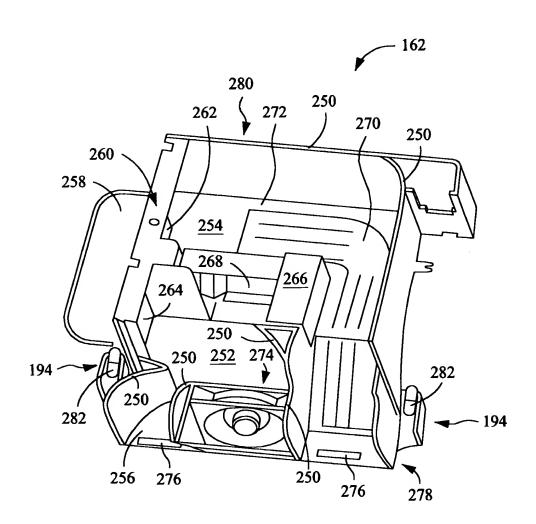
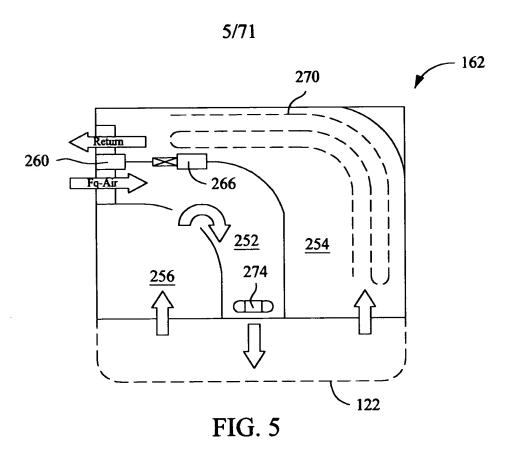
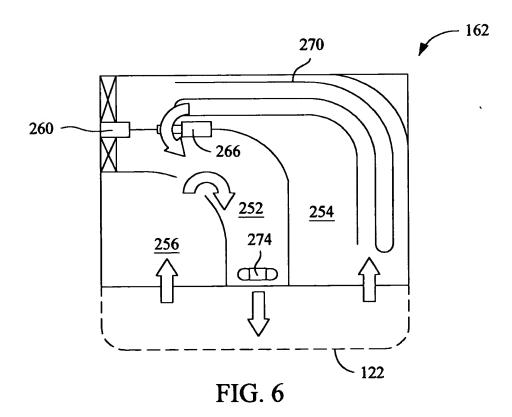


FIG. 2









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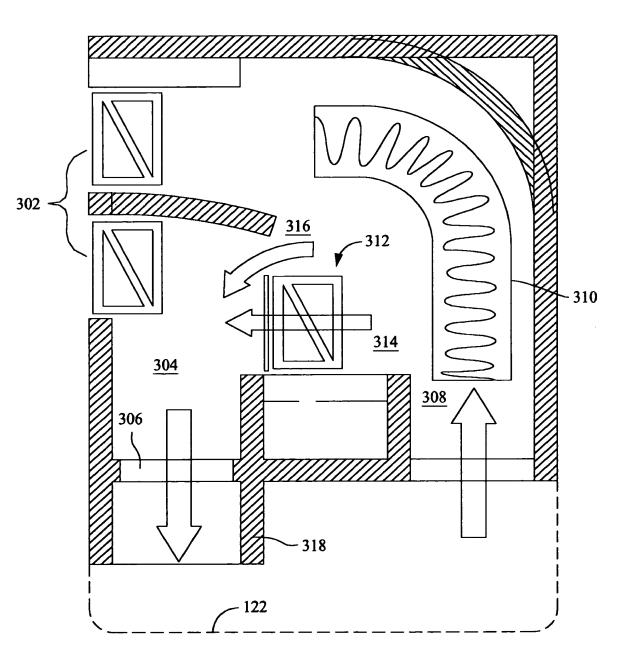


FIG. 7

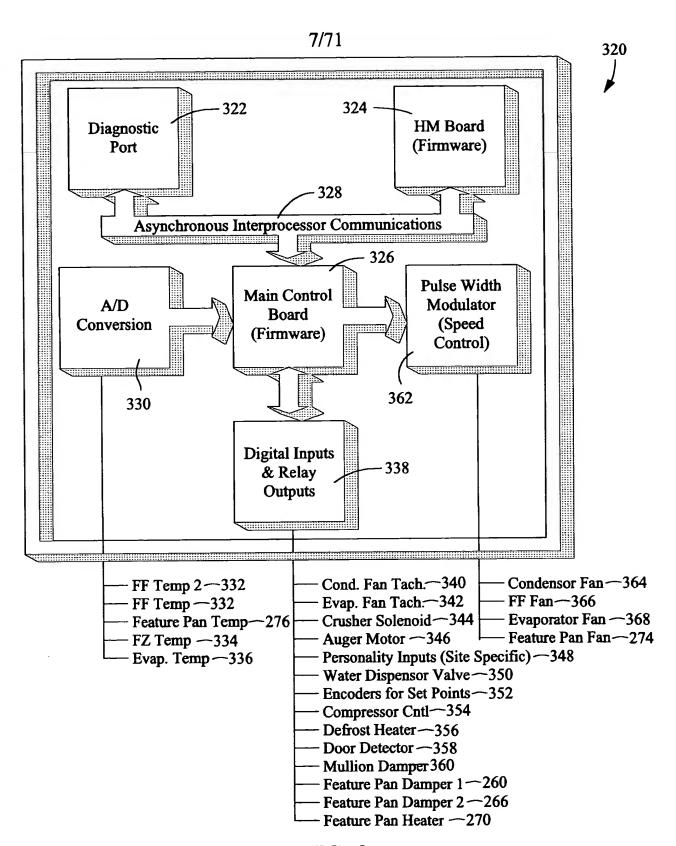


FIG. 8

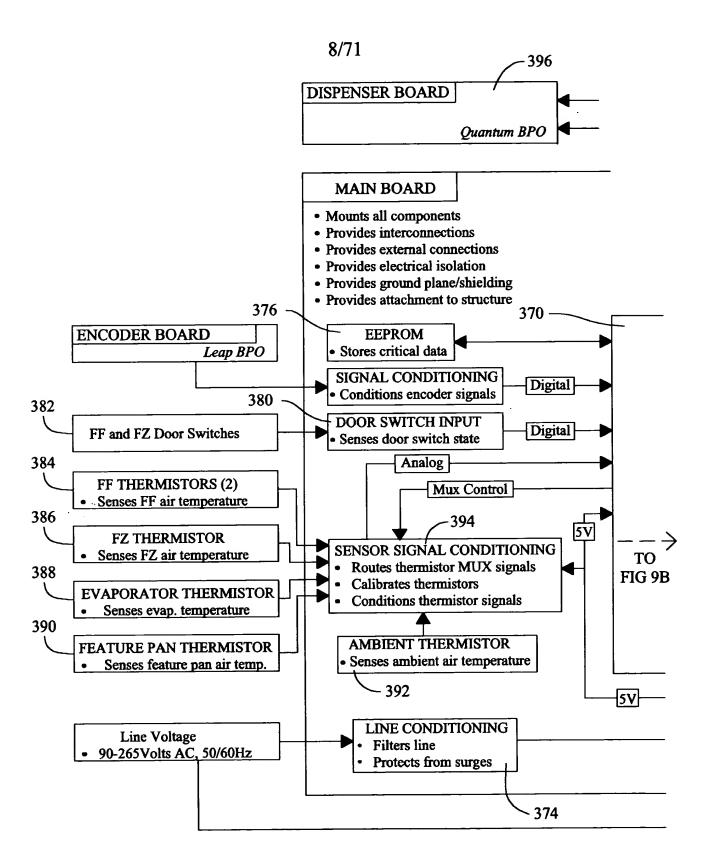
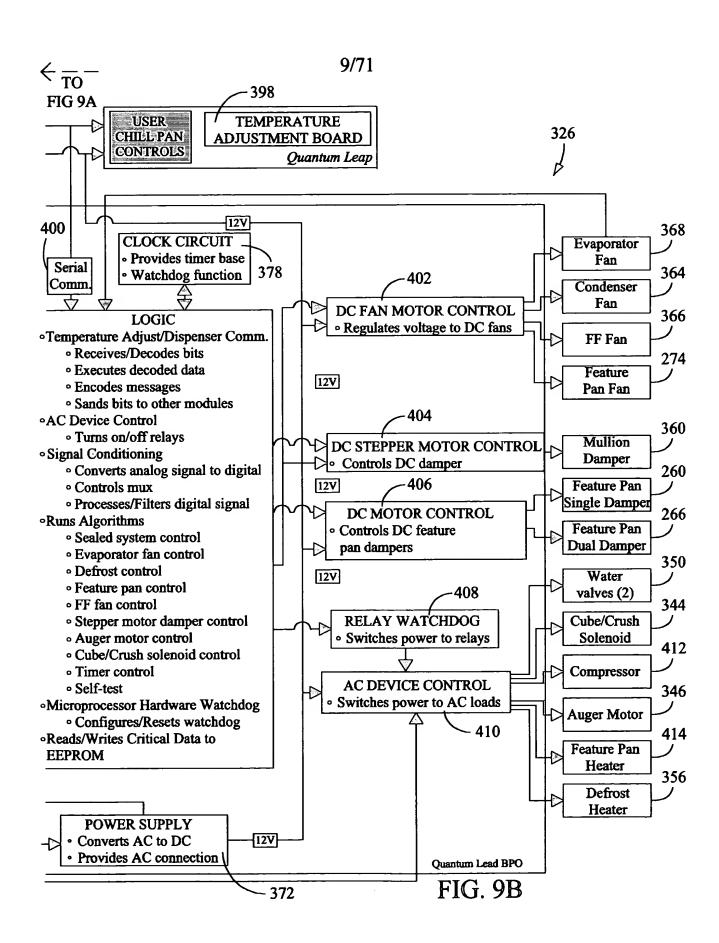


FIG. 9A



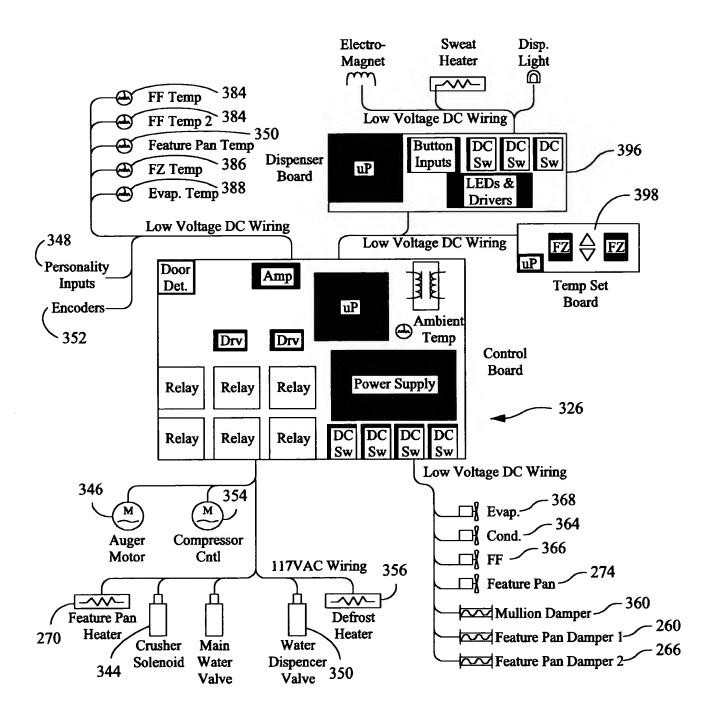
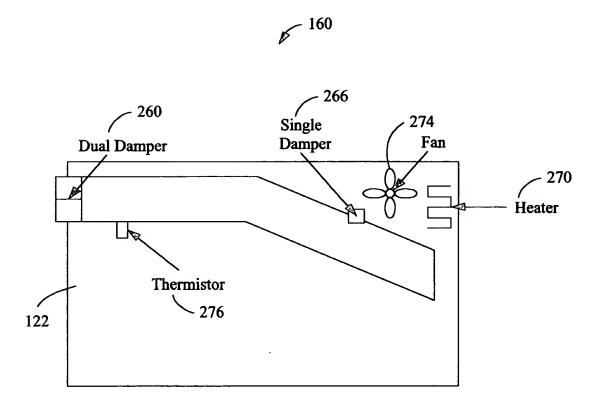
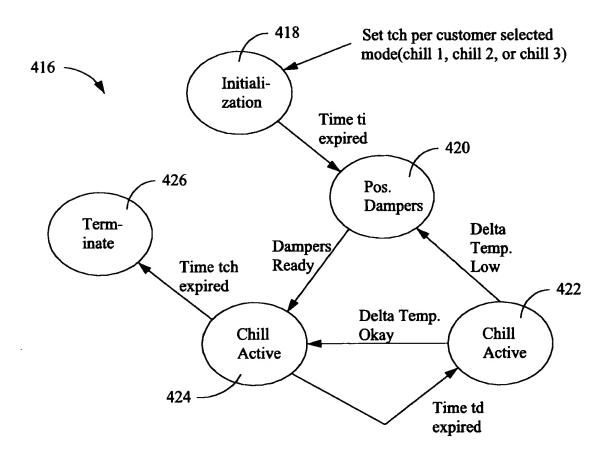


FIG. 10

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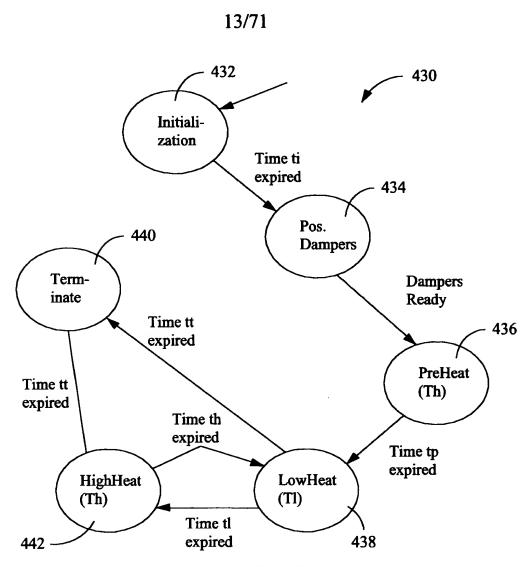
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Initialization: Shuts off heater and turns on fan. This mode is implemented so that the customer interface LED that is wired in parallel with the fan will turn on as soon as the button is hit. Time ti is the initialization time and will typically be approximately one minute.

Pos. Dampers: This state shuts off the fan, sets the single damper open then closes the dual damper. It then turns the fan back on. This is done for power management

PreHeat: This state regulates the pan temperature

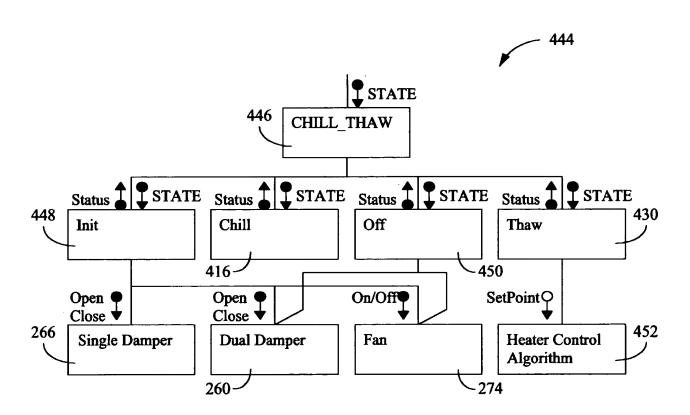
LowHeat

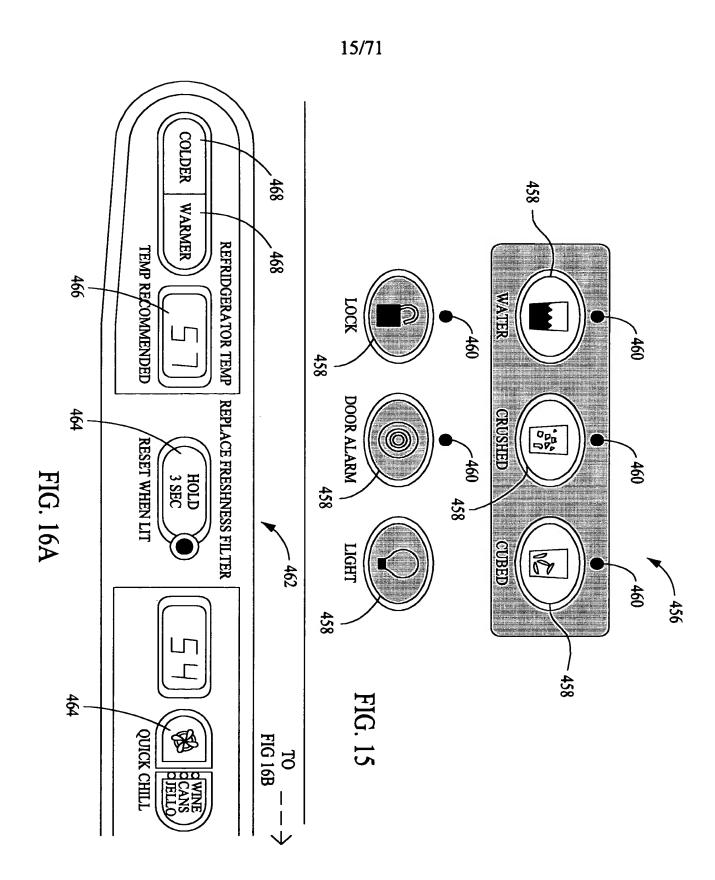
HighHeat:

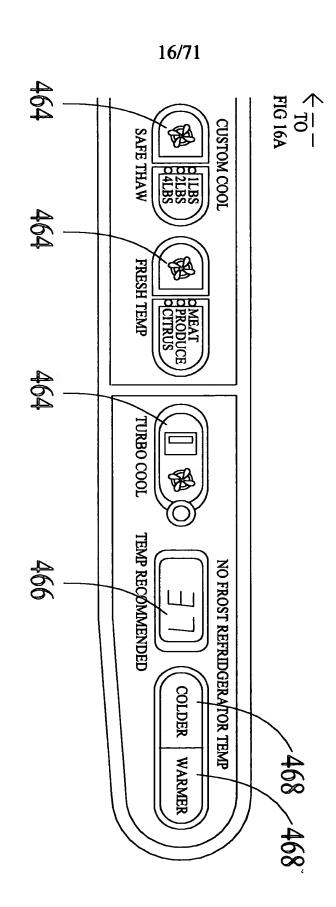
Terminate: This mode closes both dampers and shuts off the fan then returns to idle.

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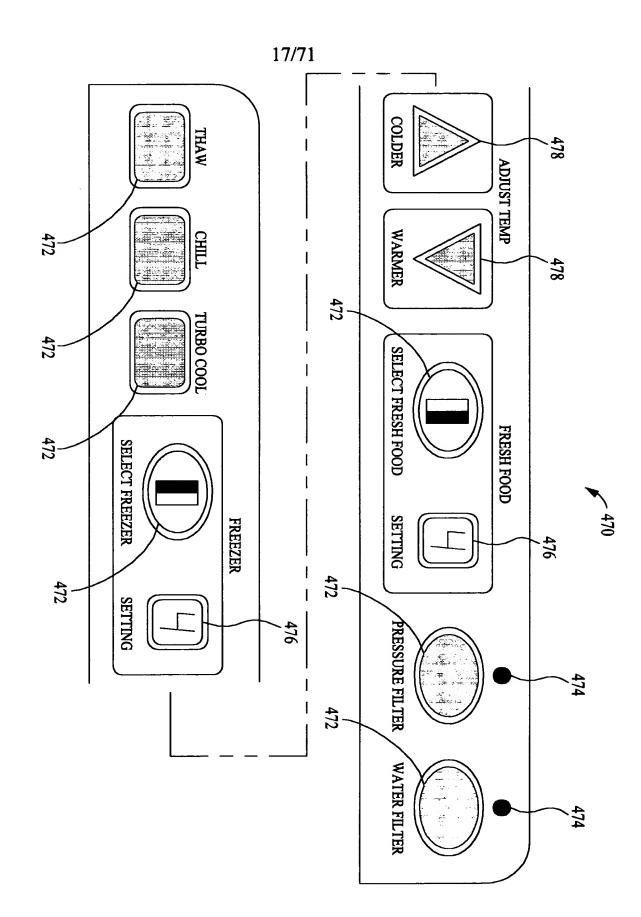
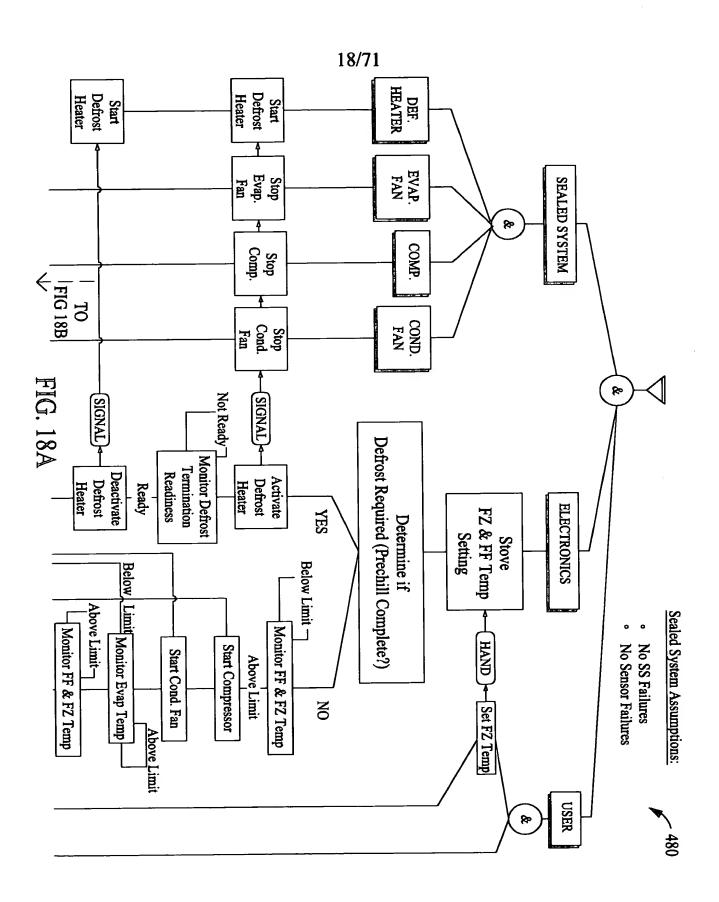
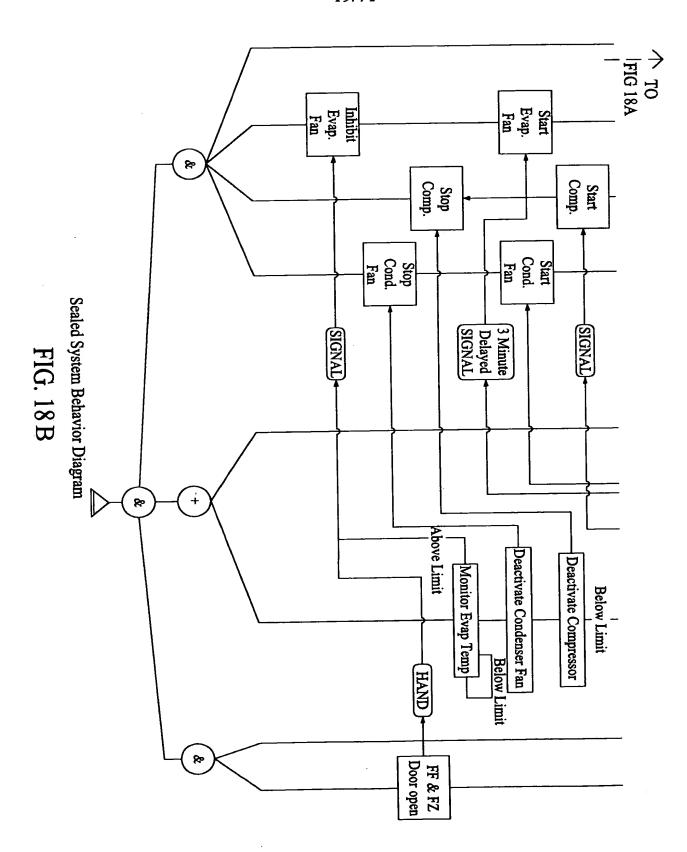


FIG. 17



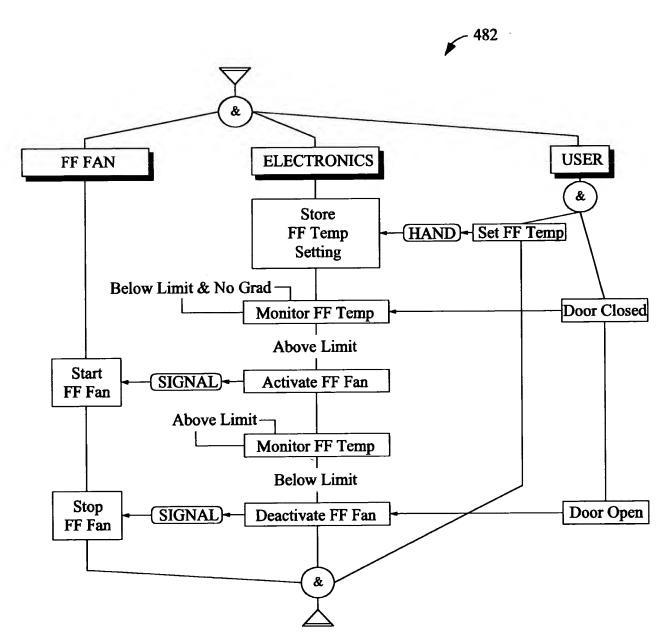
plicant: Holmes et al..; S.N. 09/754,600; Atty. Dk. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE

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icant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE

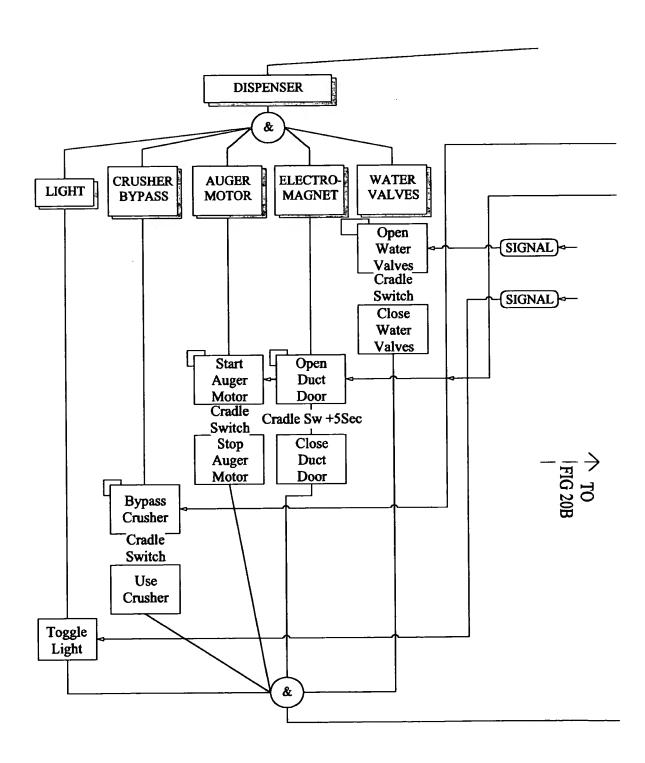
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Fresh Food Fan Behavior Diagram

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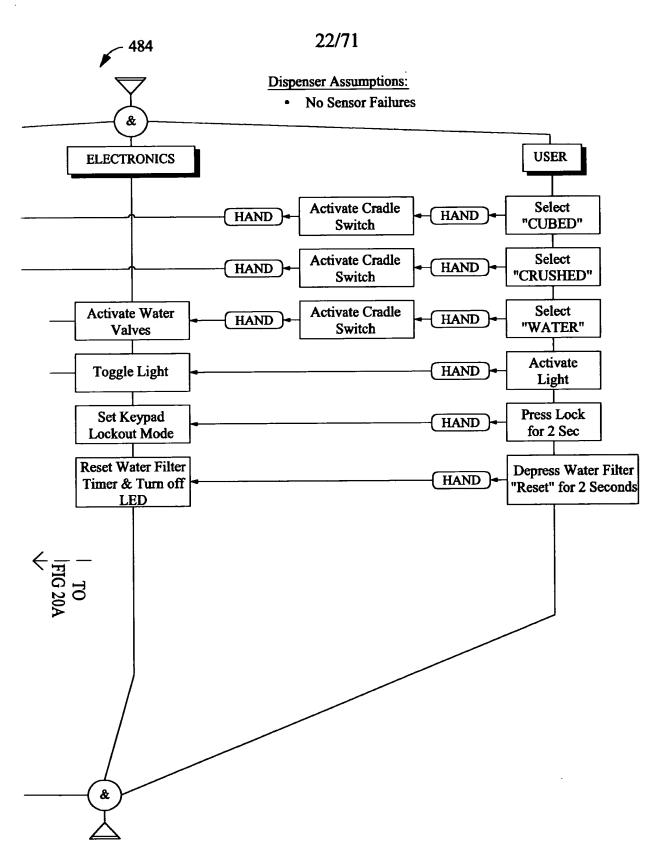


FIG. 20B

Dicant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE

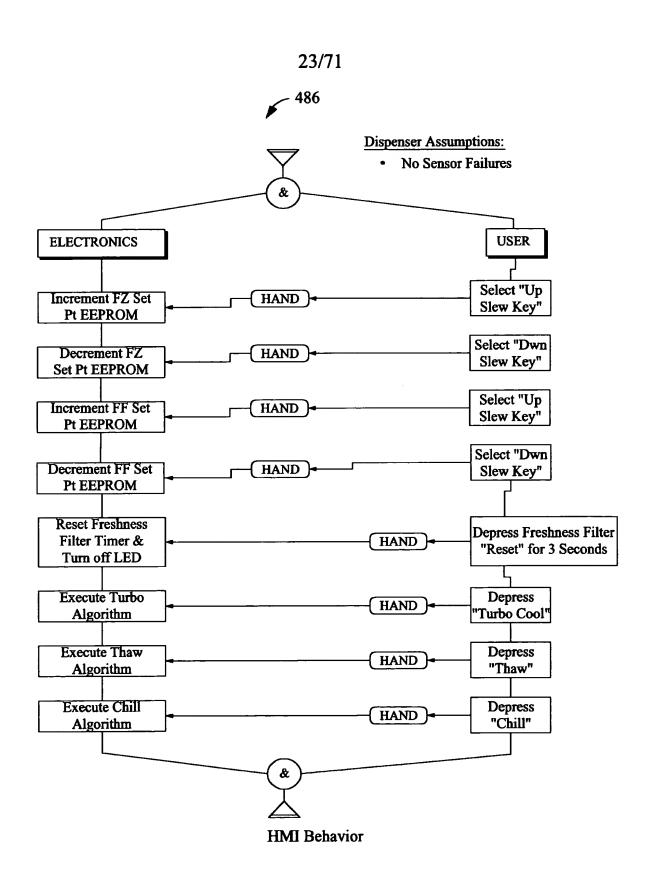
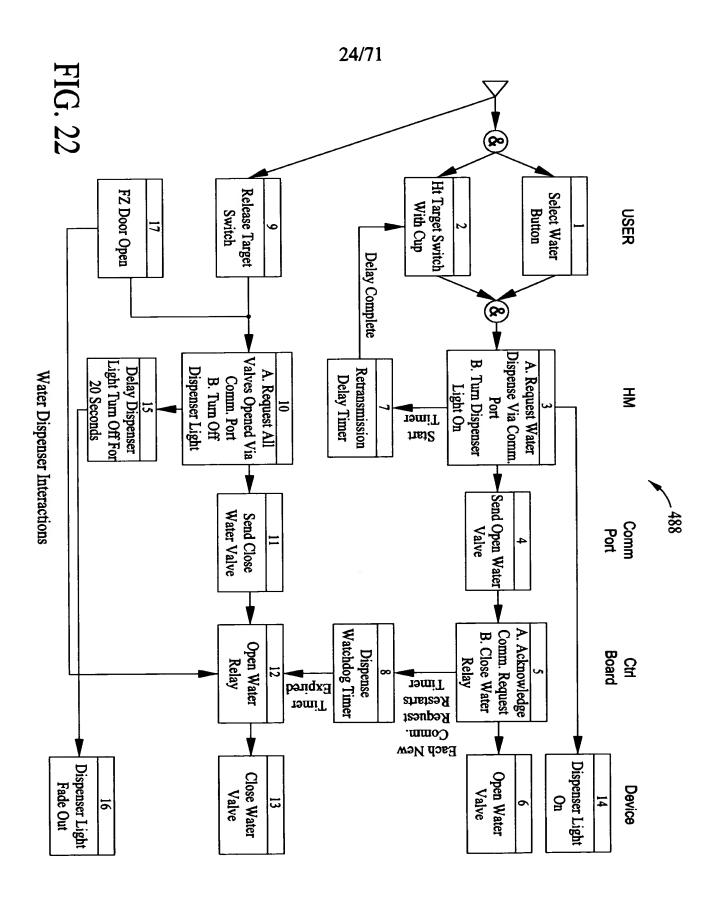
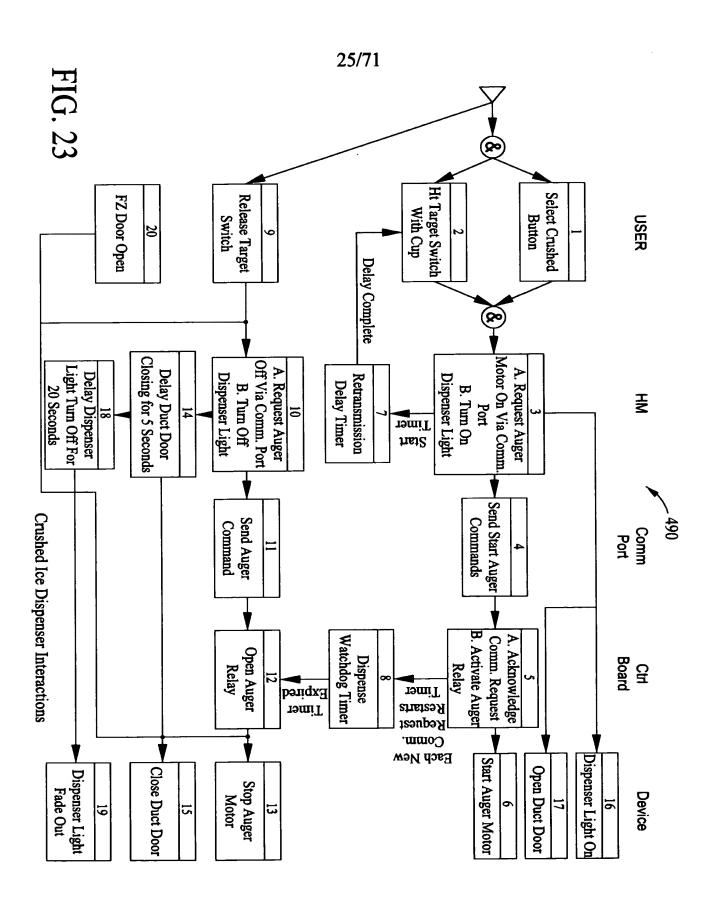


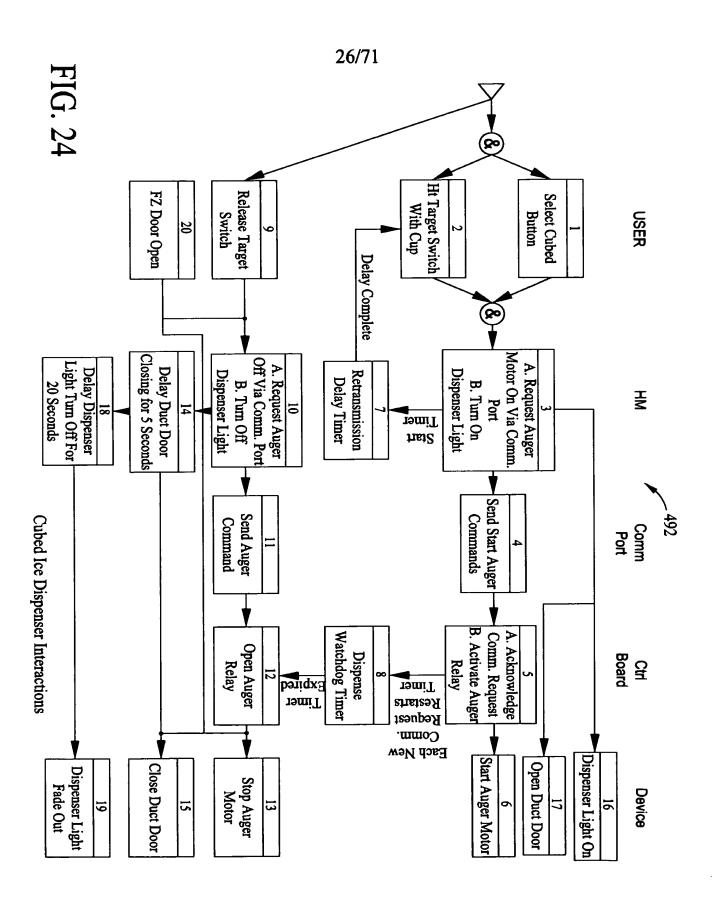
FIG. 21



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pplicant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE



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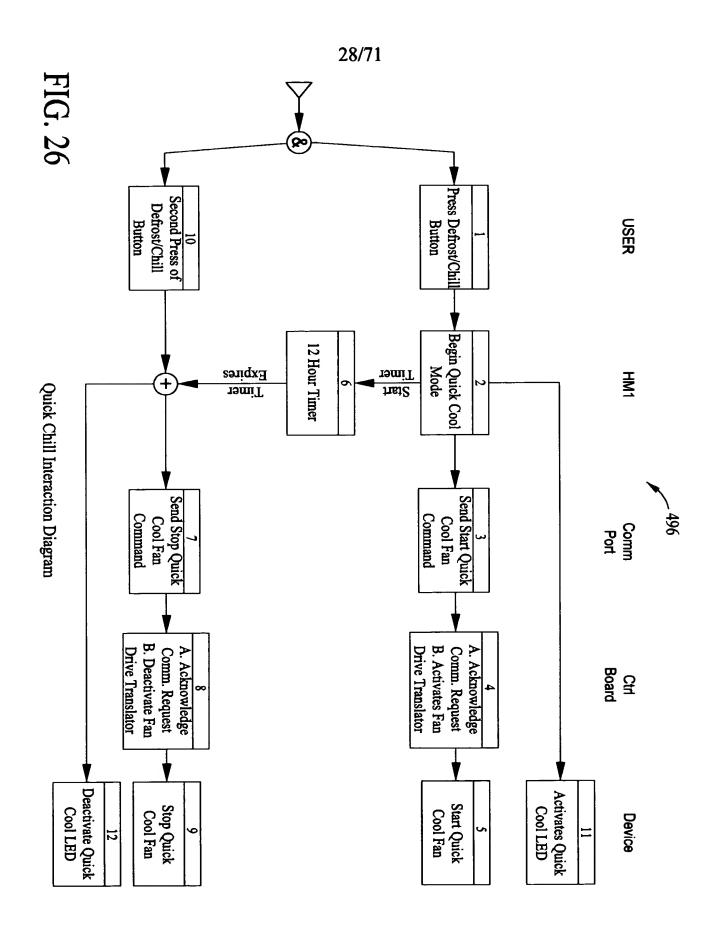
FIG. 2:

NOTE: Setpoint Selected implies that the final selection δo (See User Interface Temperature Selec Mode Requested **User Enters New** Interface Spec) Setpoint (See USER Spec) Request Current Display Current Temperature Interface Spec) Setpoint (See Select New Setpoints ₹ Setpoint Selected Reply to Setpoint Send Request Set Setpoints To EEPROM **Points From EEPROM** Request Command Send New Comm Port 6 5 Comm. Request A. Acknowledge Comm. Request from EEPROM Send Setpoints Acknowledge B. Update **EEPROM** to HMI Ctrl Board

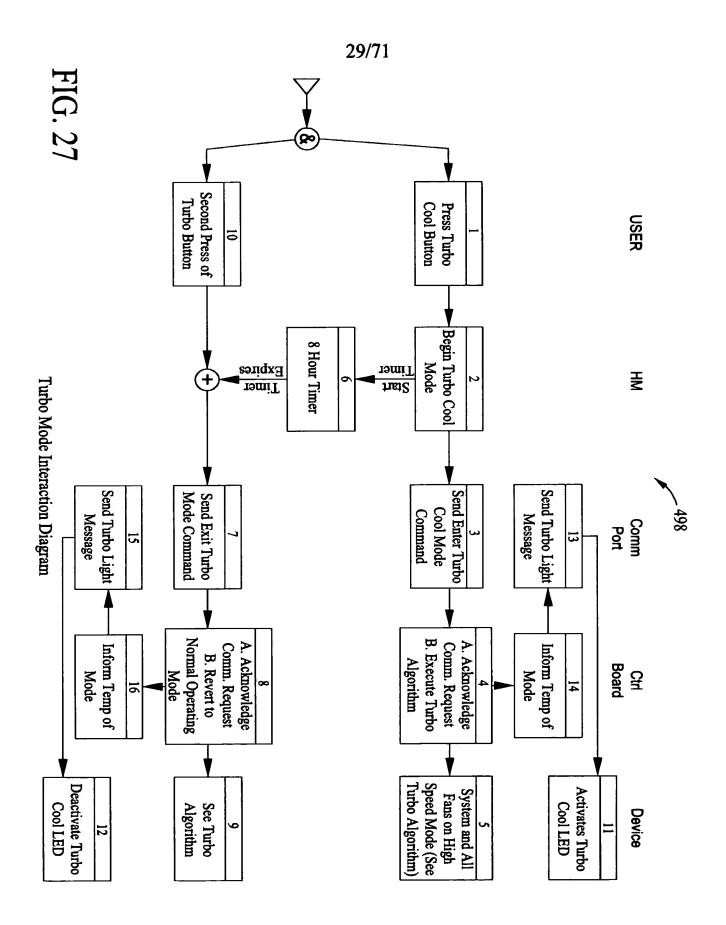
has been made and that the selection has timed out.

Temperature Setting Interaction Diagrams

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plicant: Holmes et al..; S.N. 09/754,600; Atty. Dk 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE

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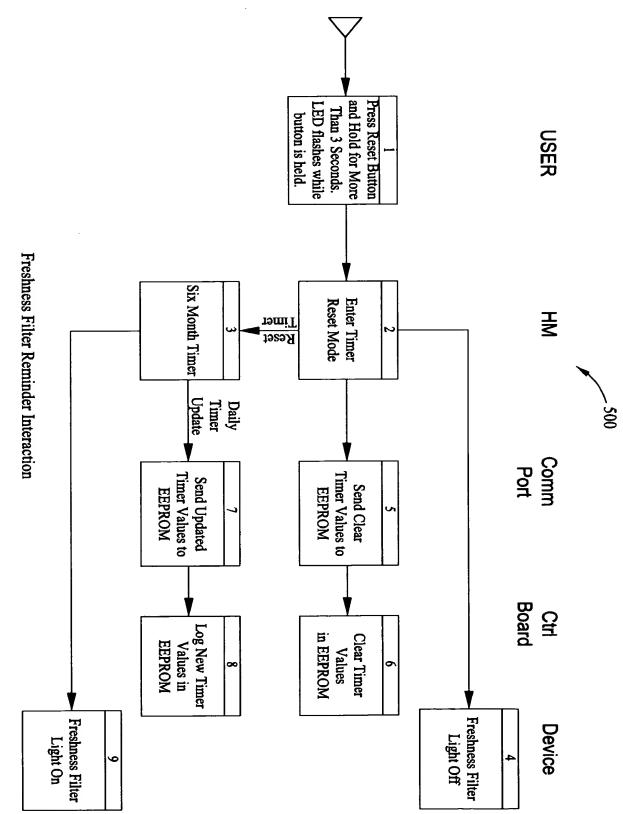
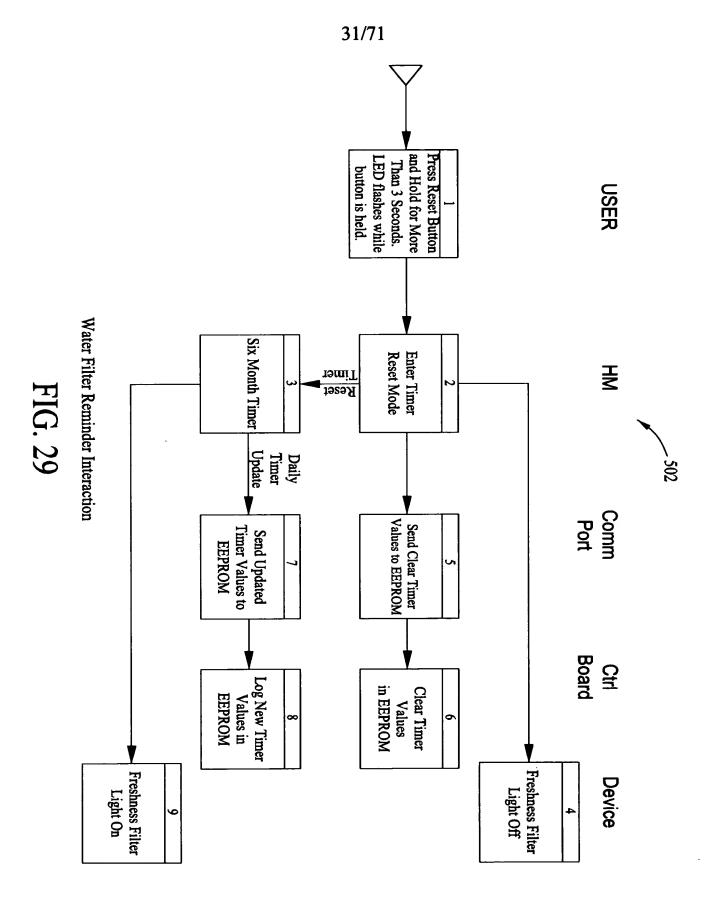
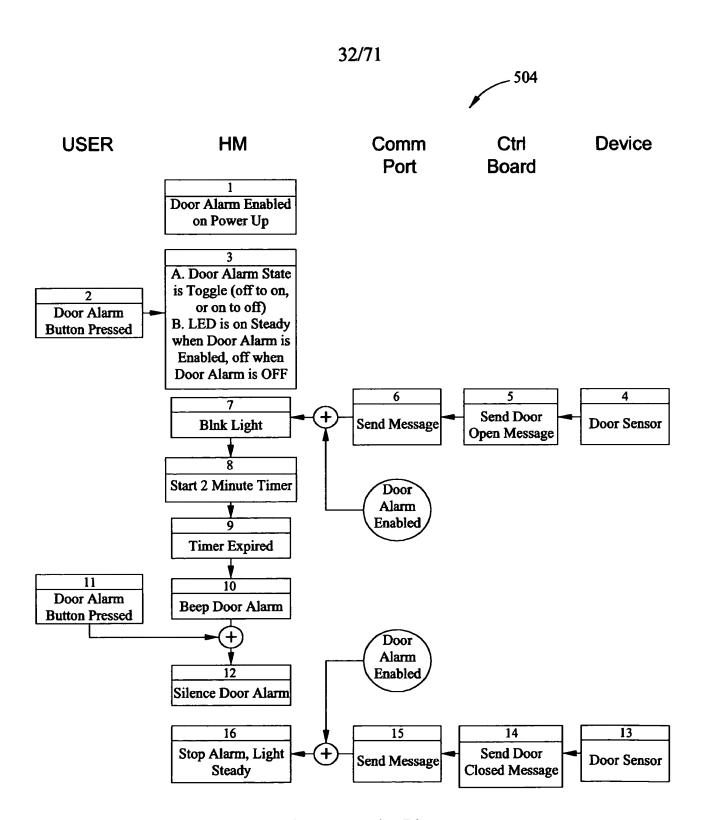


FIG. 28

plicant: Holmes et al..; S.N. 09/754,600; Atty. Dk. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE



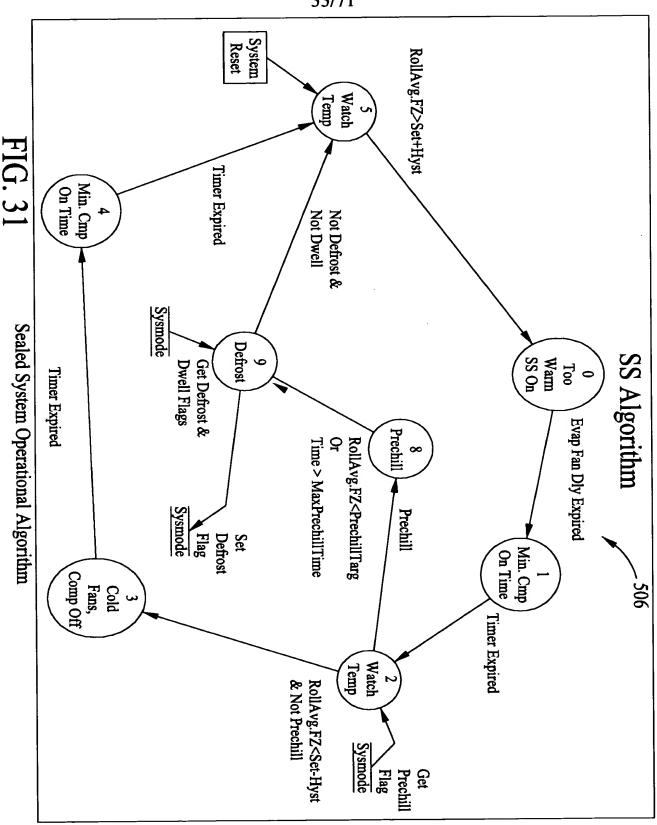
plicant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE



Door Open Interaction Diagram

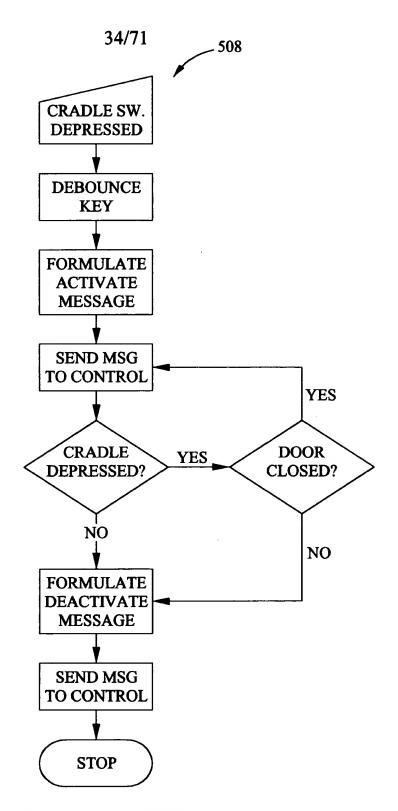
FIG. 30





licant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE

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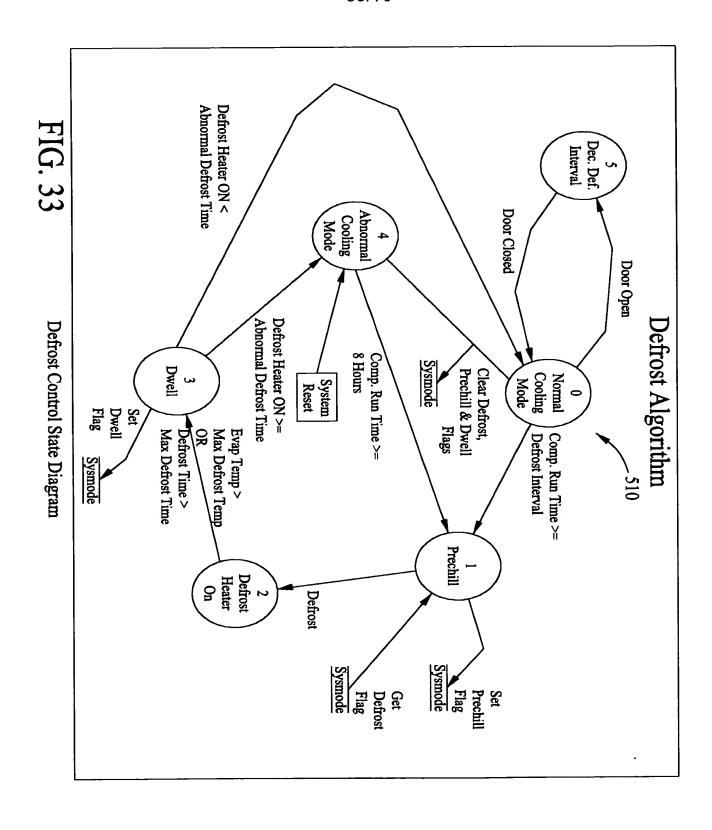


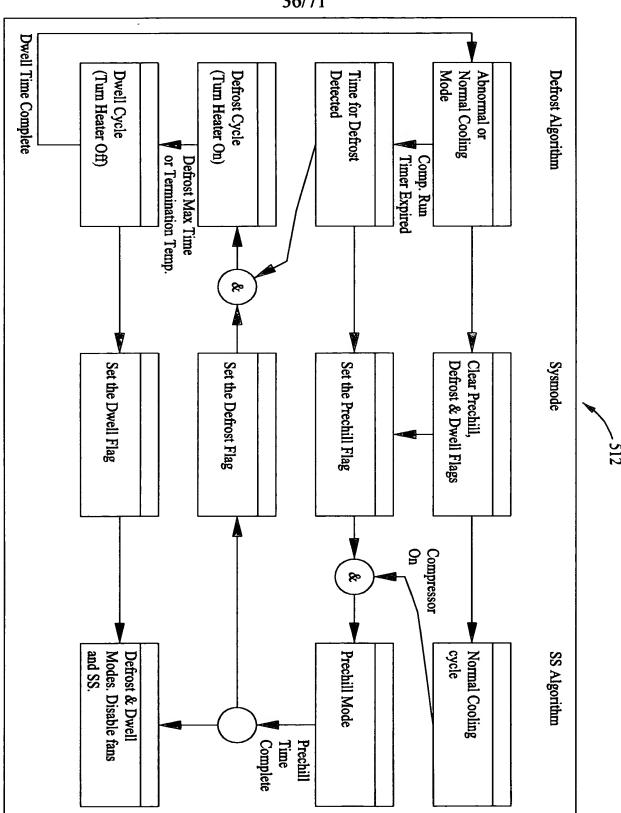
Dispenser Control Algorithm

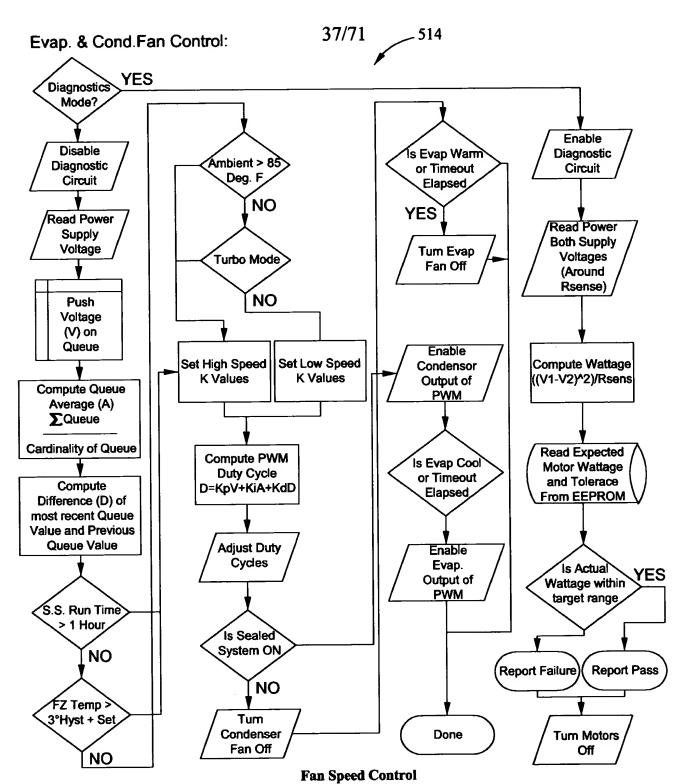
FIG. 32

plicant: Holmes et al..; S.N. 09/754,600; Atty. Dkt Title: REFRIGERATOR SYSTEM AND SWARE ARCHITECTURE

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Notes: 1 T

- 1. The FF & Evaporator fans will shut off for the first five minutes that the door is open
- 2. Only one fan at a time can be on at a time during diagnostics.
- 3. Once the fan has been switched to high speed, it remains in that state until the operational cycle is complete. FIG. 35

Applica plmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-19406 Tihe-REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE

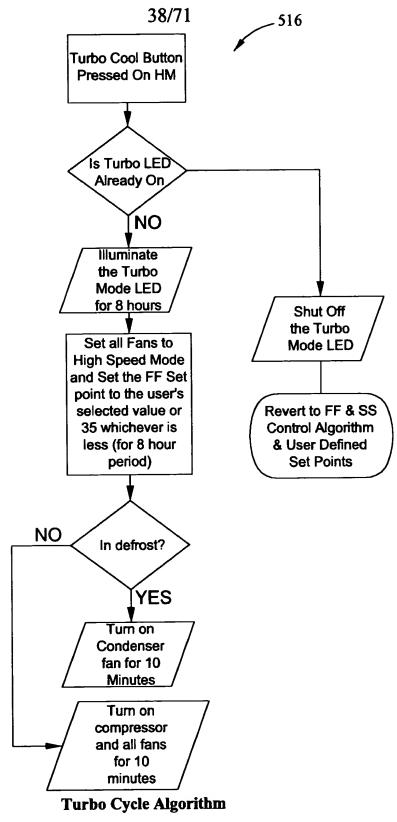
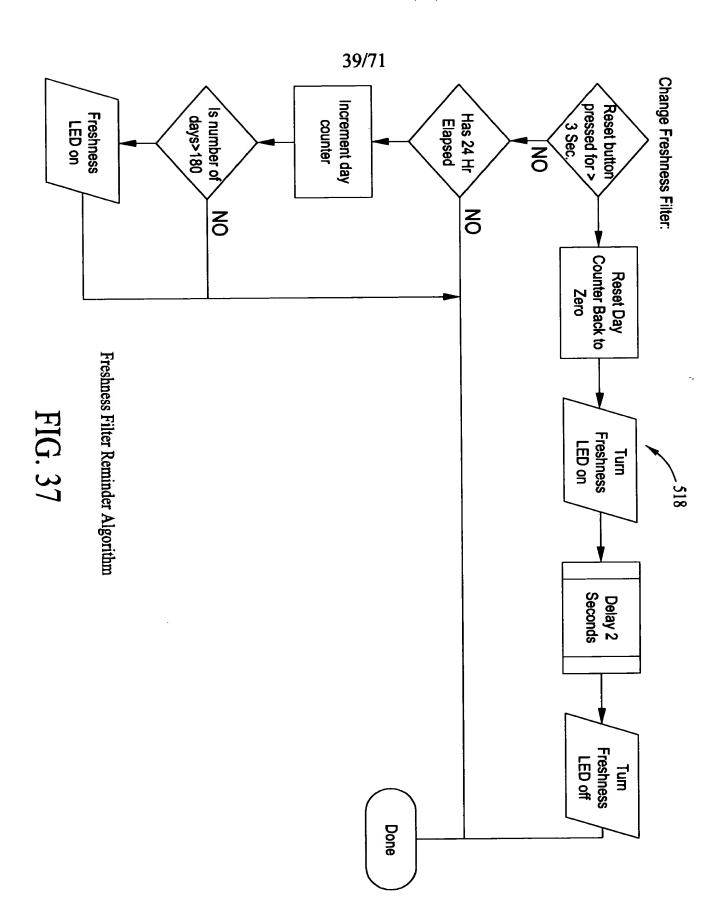
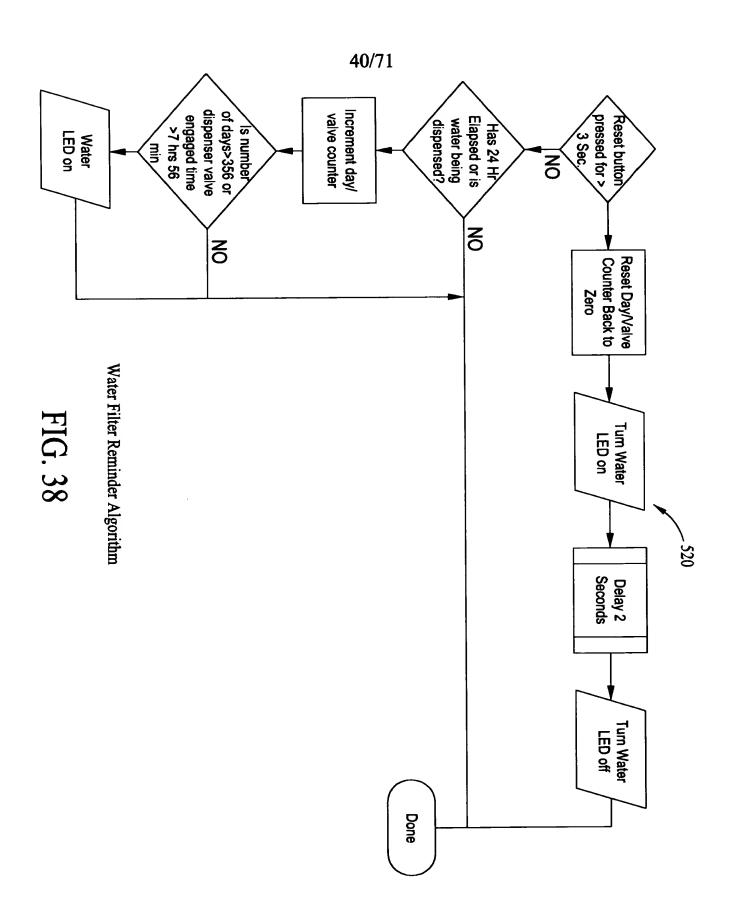


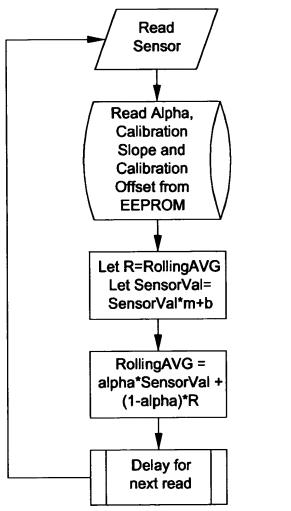
FIG. 36

icant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE







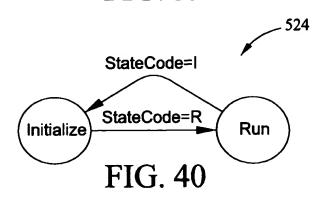


NOTE:

Sensor Reading Algorithm

Fresh food average uses this algorithm twice to create a 2nd pole filter.

FIG. 39



olicant: Holmes et al..; S.N. 09/754,600; Auy. Dkt 9D-HR-Title: REFRIGERATOR SYSTEM AND SOFTWARE 9D-HR-19406 **ARCHITECTURE**

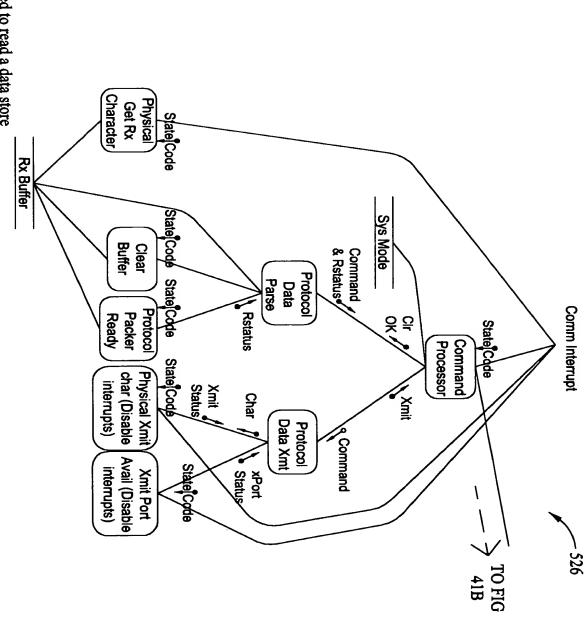
John S. Beulick, Armstrong Teasdale LLP, One Metropolitan Square, Suite 2600, St. Louis, MO 63102 (314) 621-5070

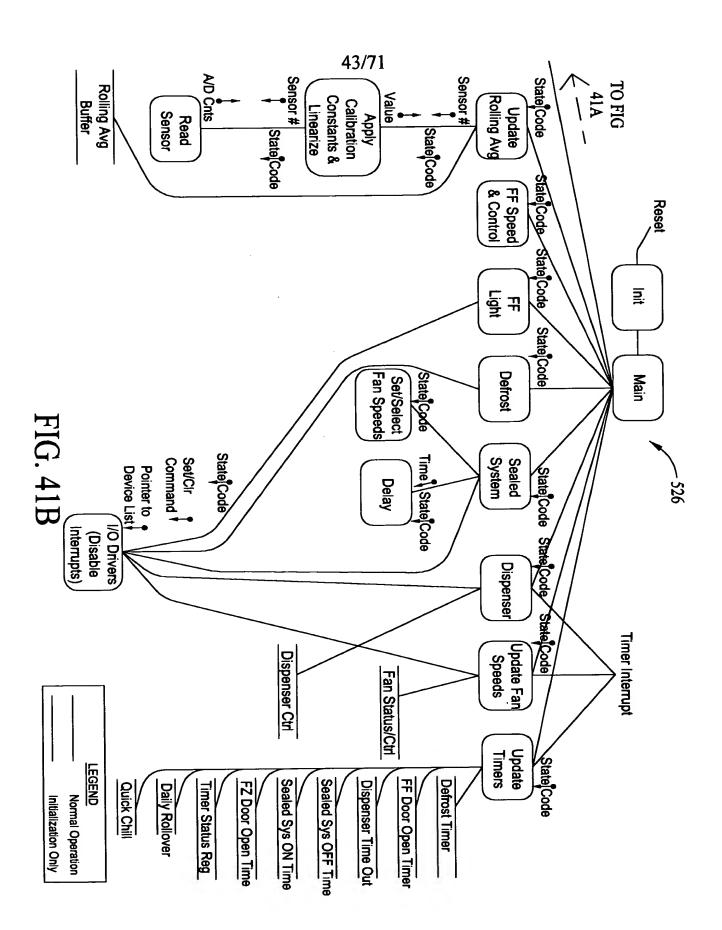
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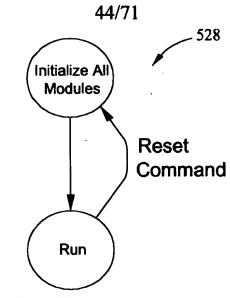
Note: Any Routine is allowed to read a data store

Dashed line indicates a path for initialization only The command processor can read or write any data store.

FIG. 41A



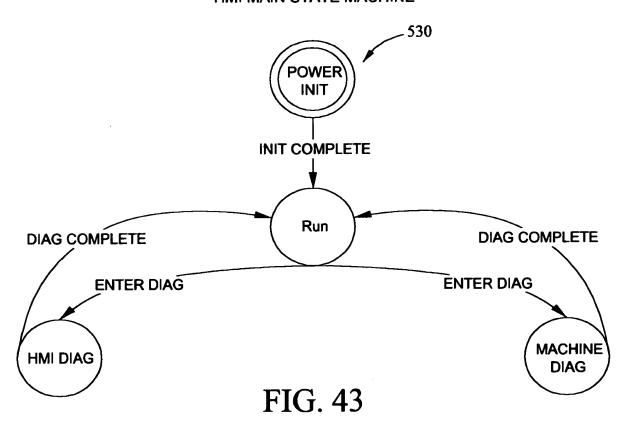




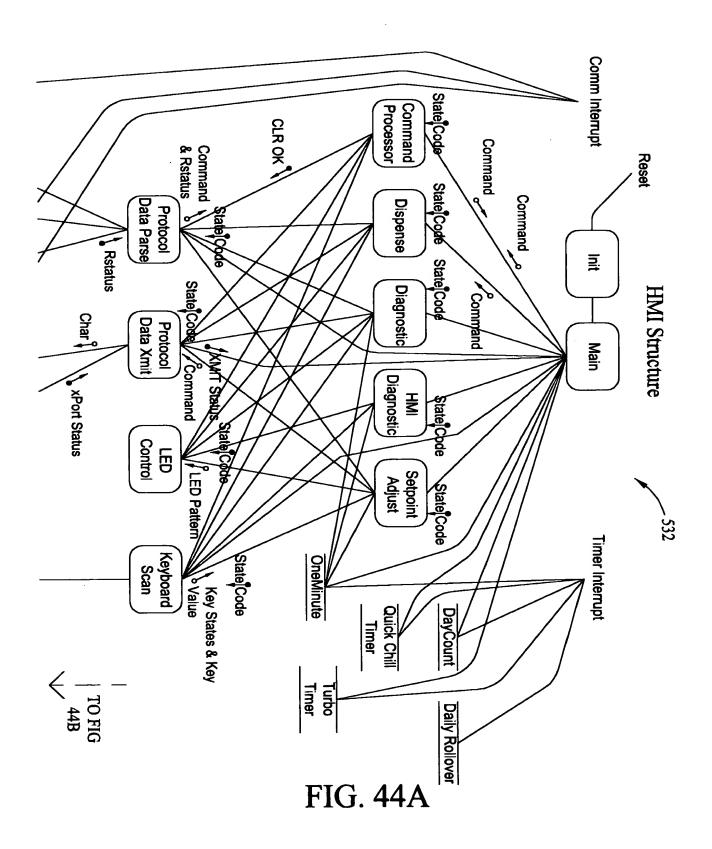
State Diagram For Main Control

FIG. 42

HMI MAIN STATE MACHINE



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plicant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE

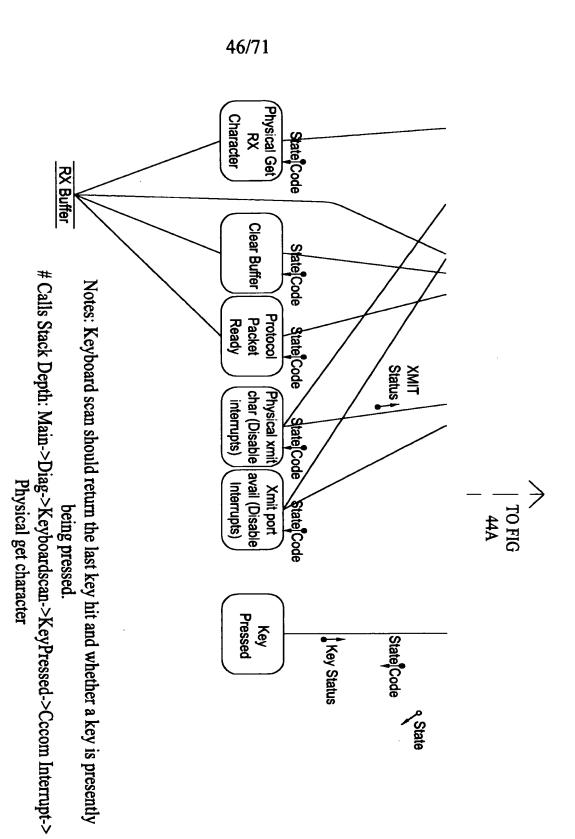
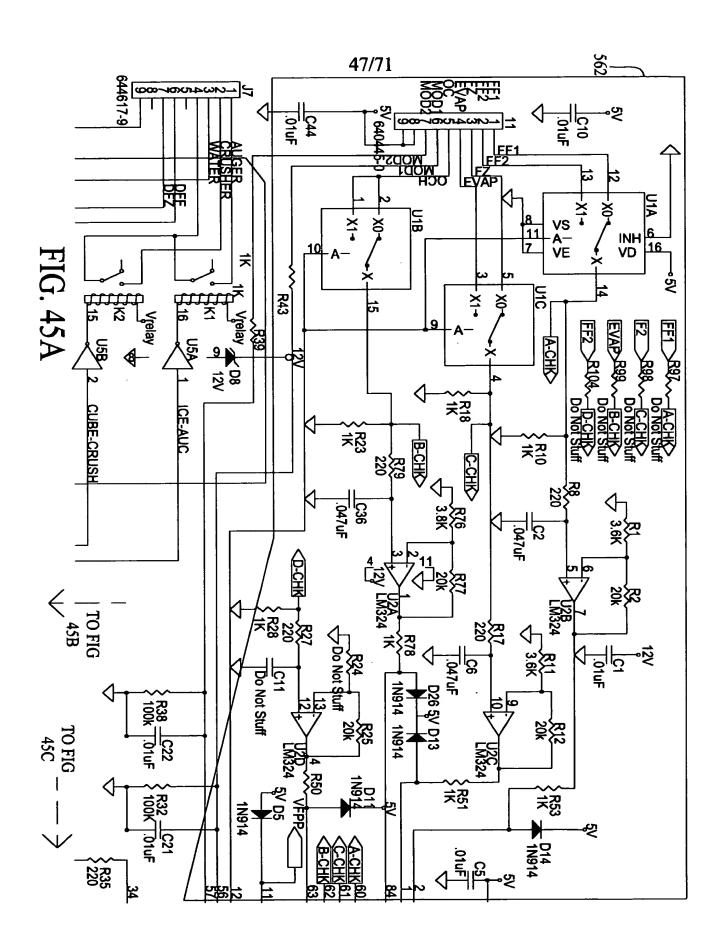
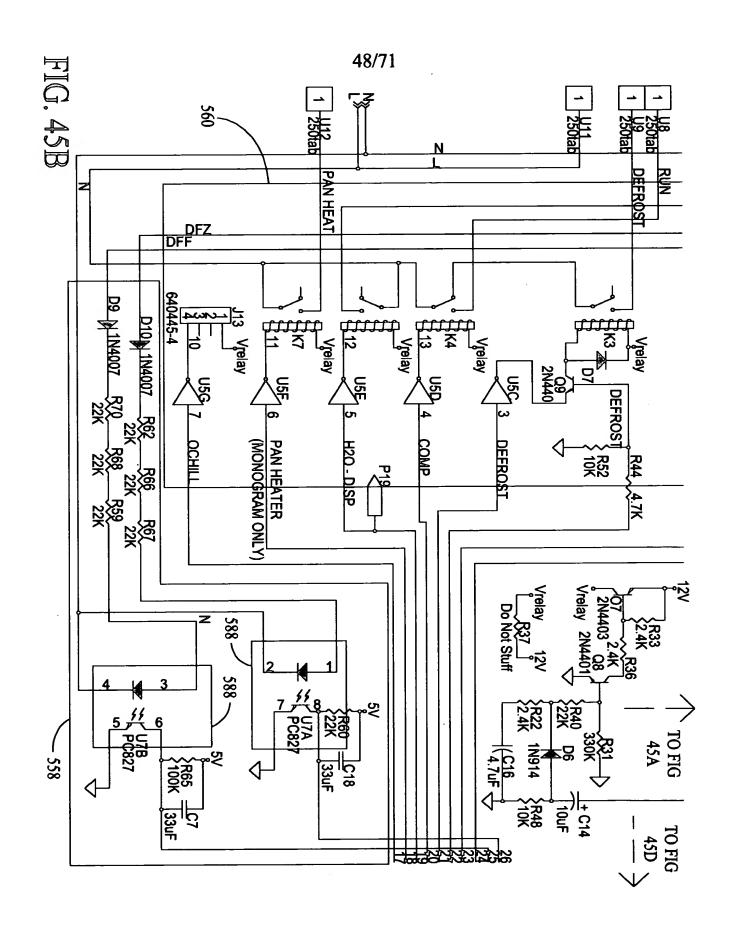


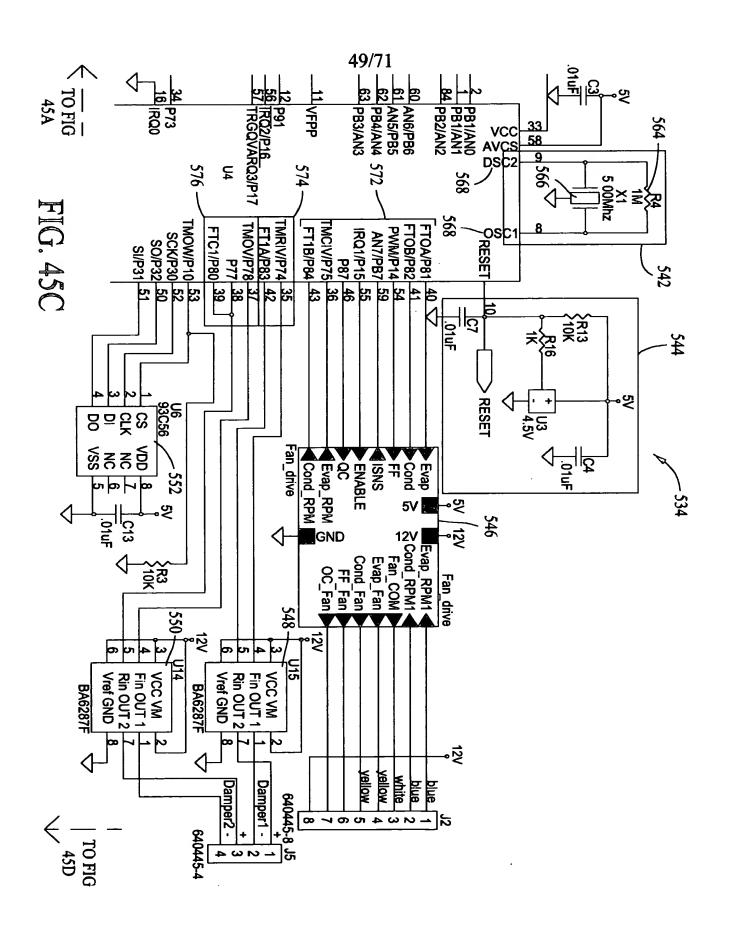
FIG. 44B

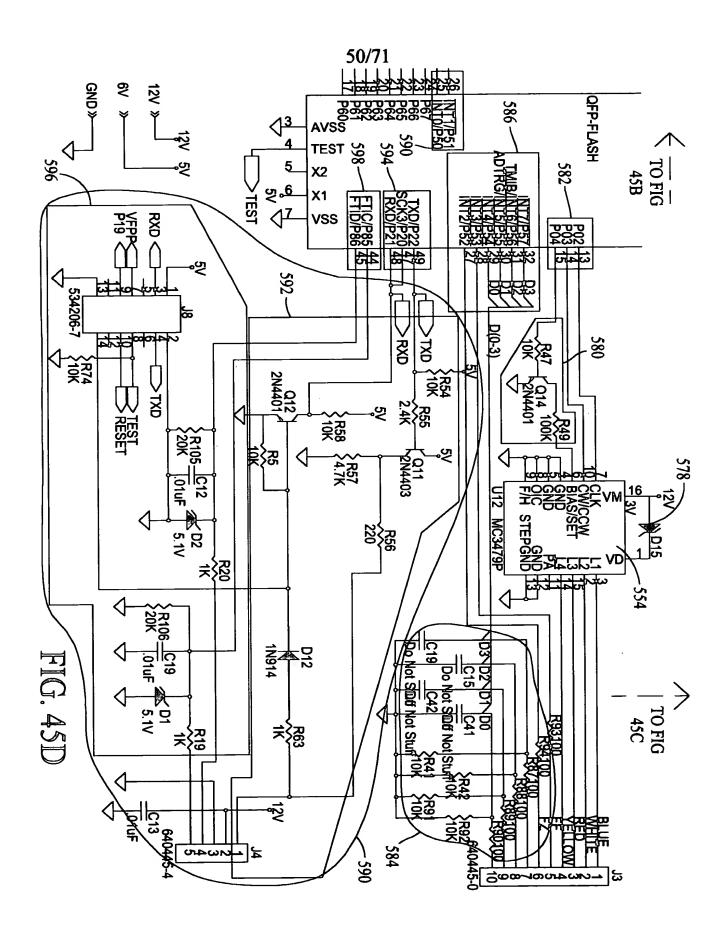


icant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. N. D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE



licant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE





pplicant: Holmes et al..; S.N. 09/754,600; Atty. DK

o. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE **ARCHITECTURE**

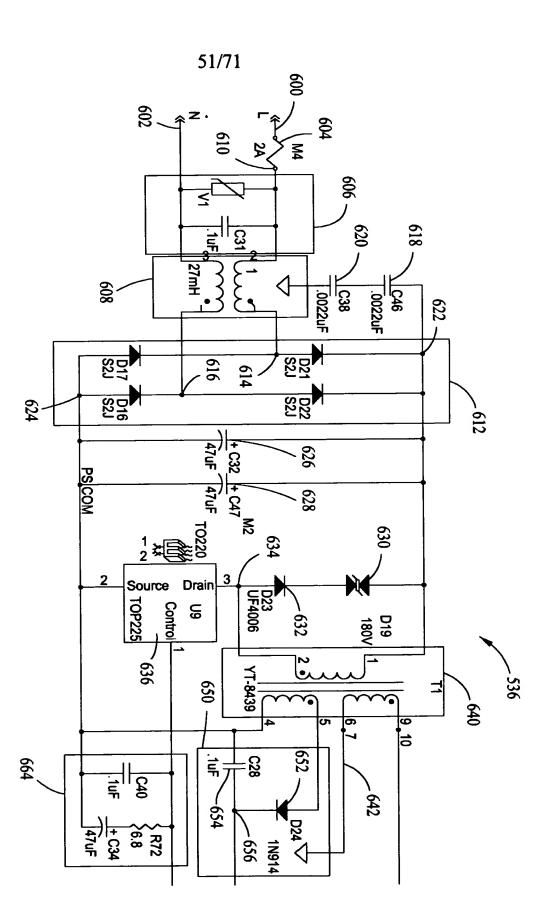
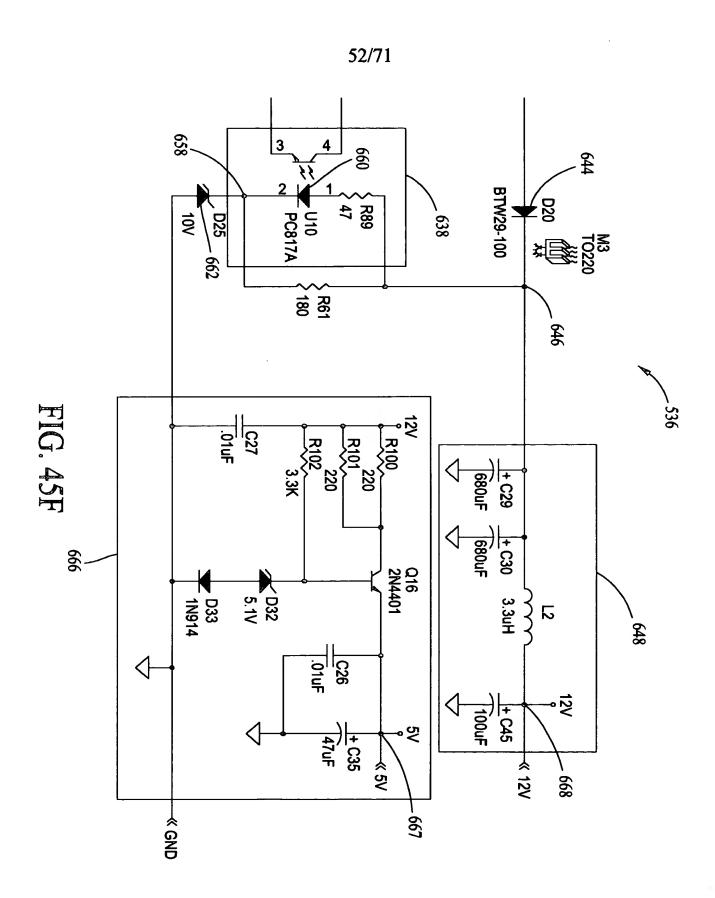
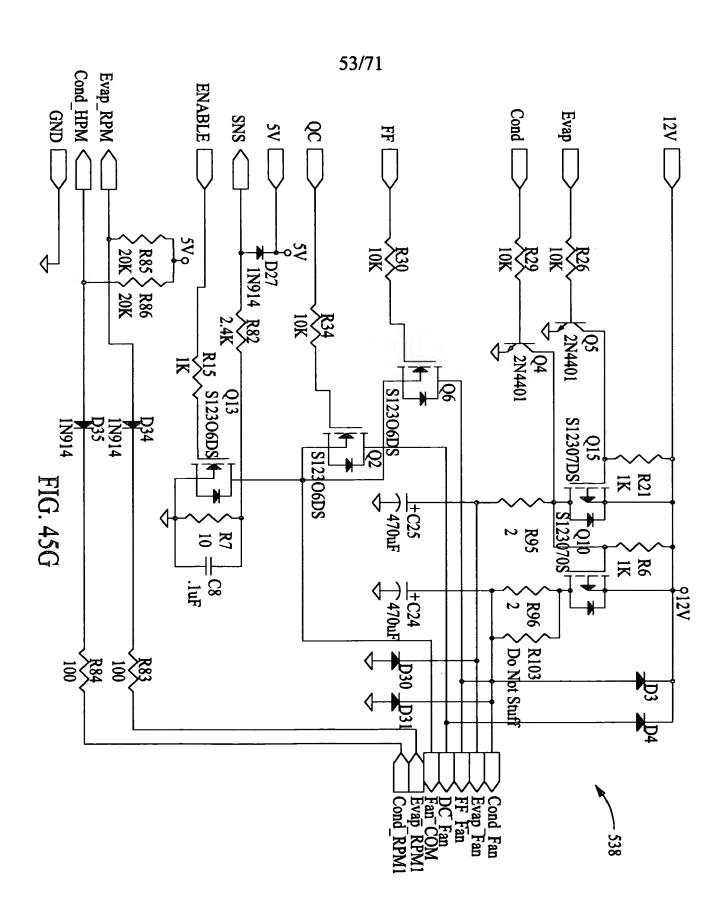
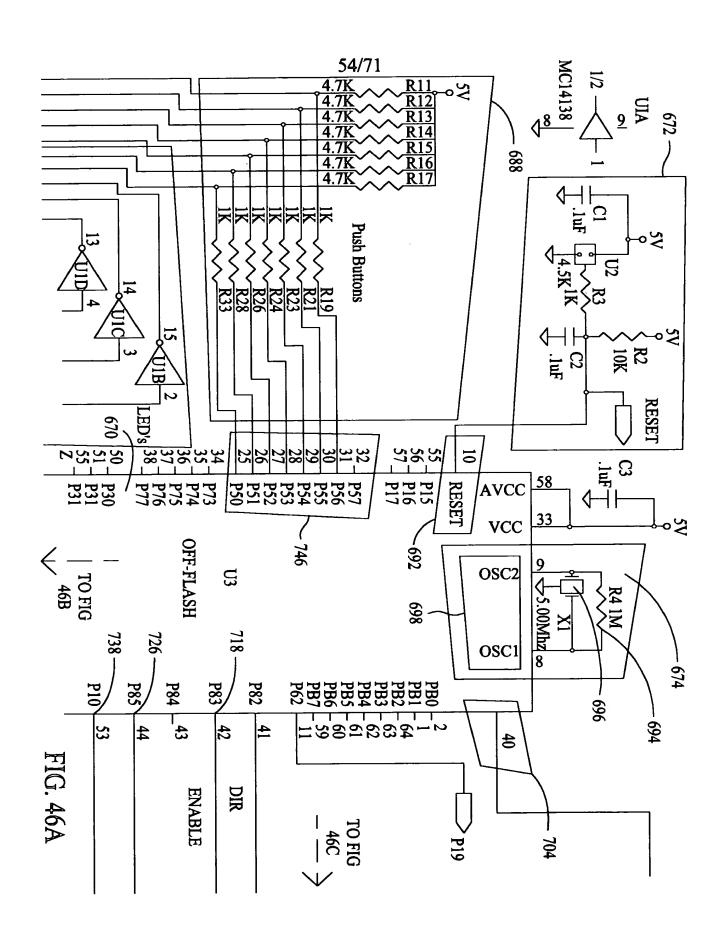


FIG. 45E

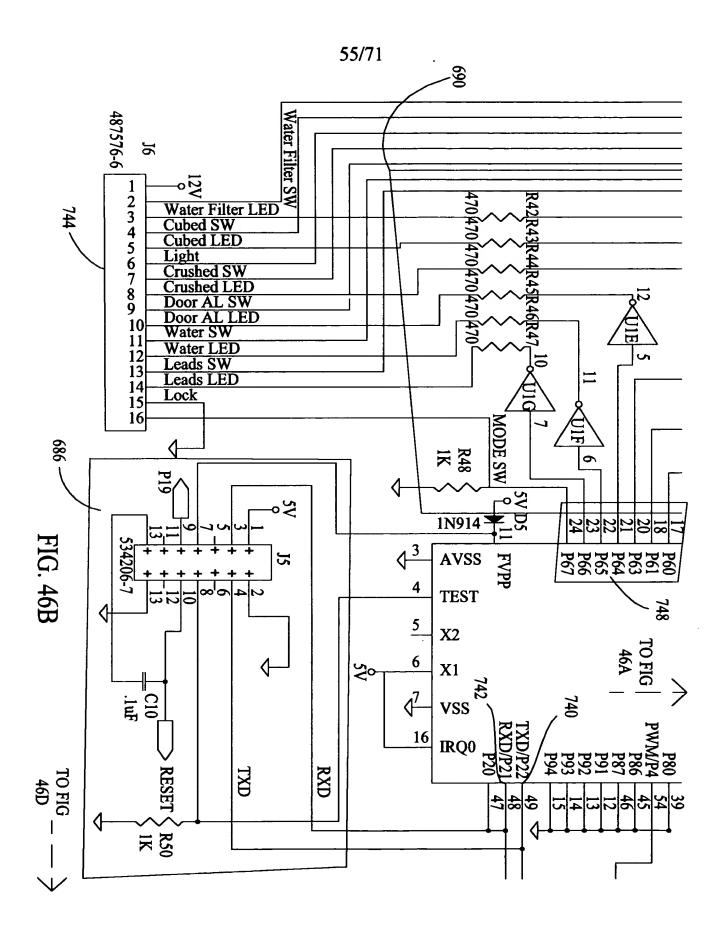
licant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. 9D-HR-19406
Title: REFRIGERATOR SYSTEM AND SOFTWARE
ARCHITECTURE

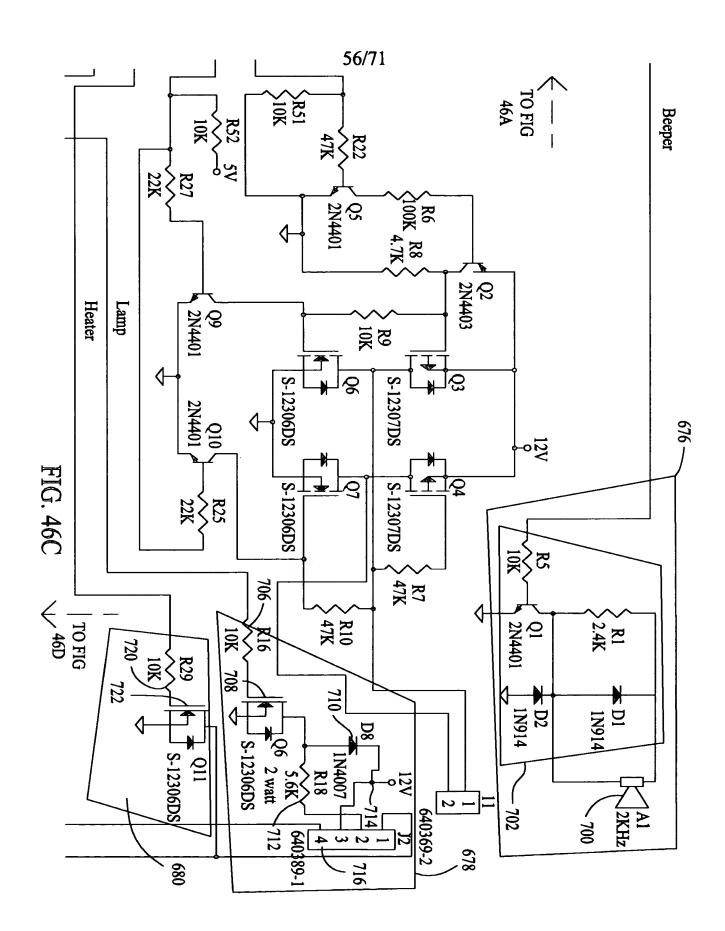


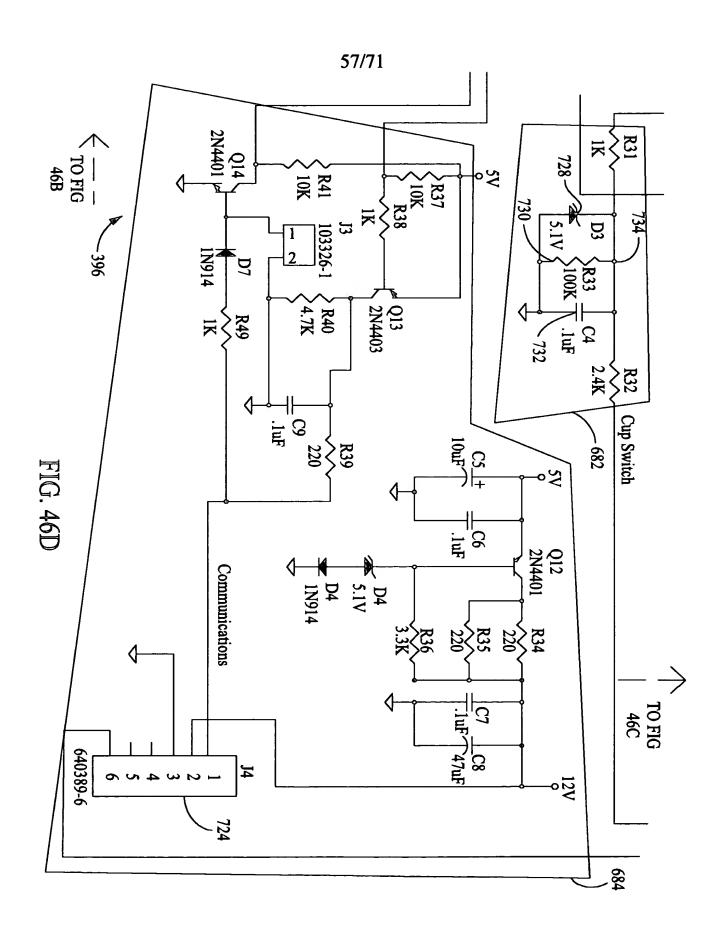




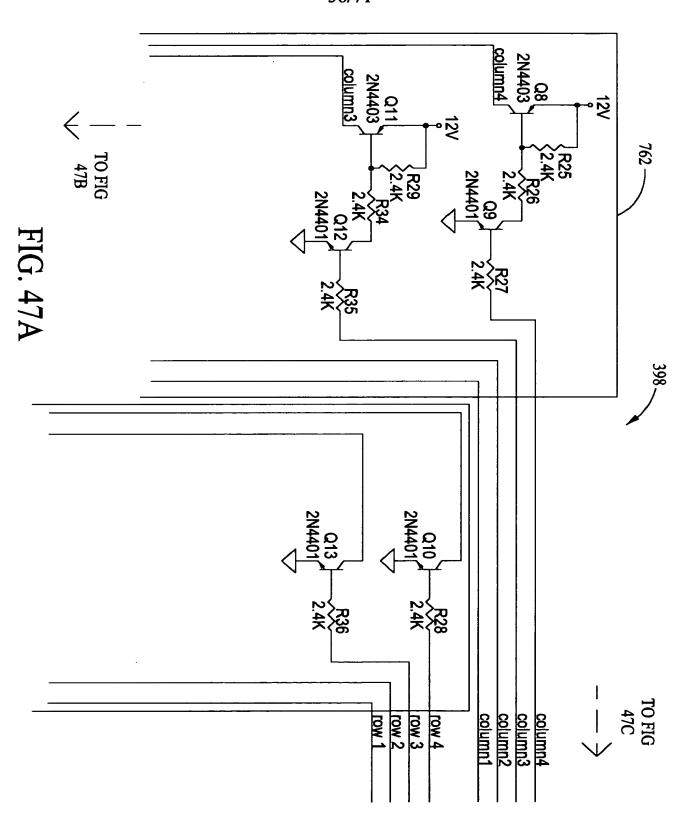
cant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE



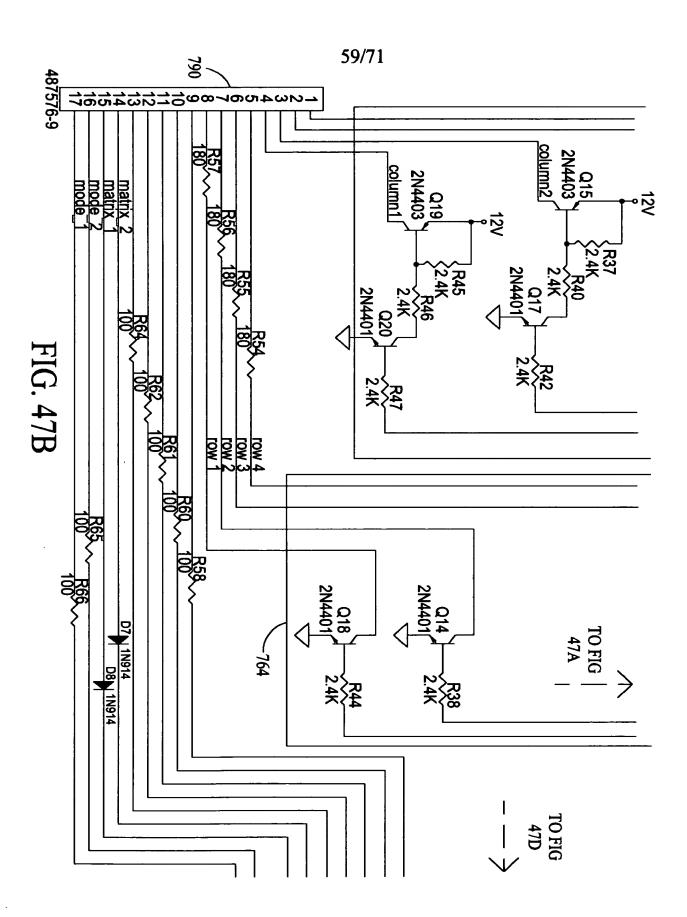




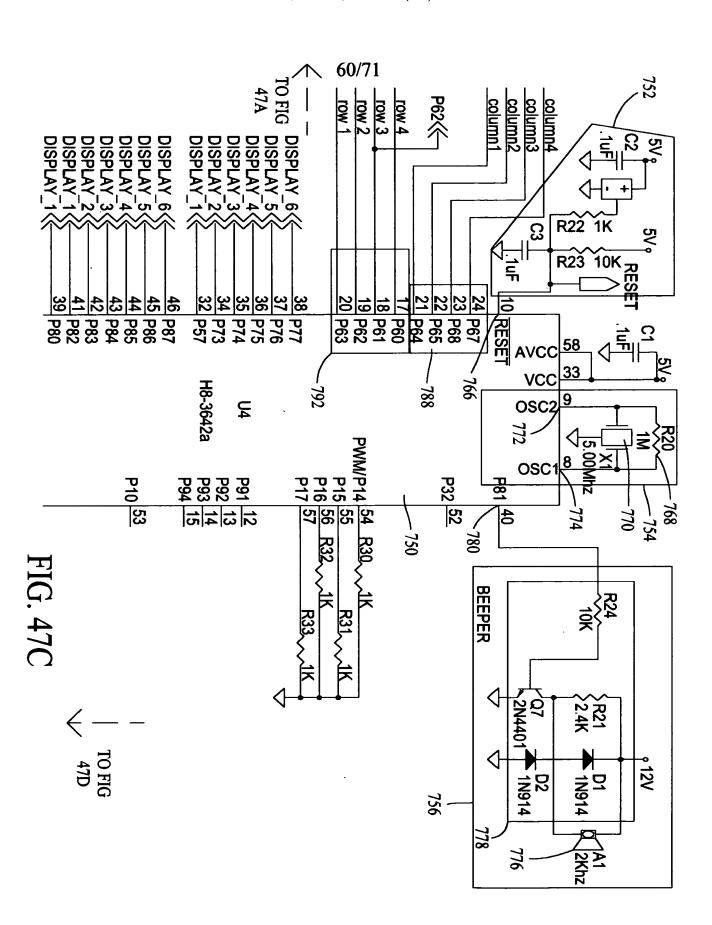
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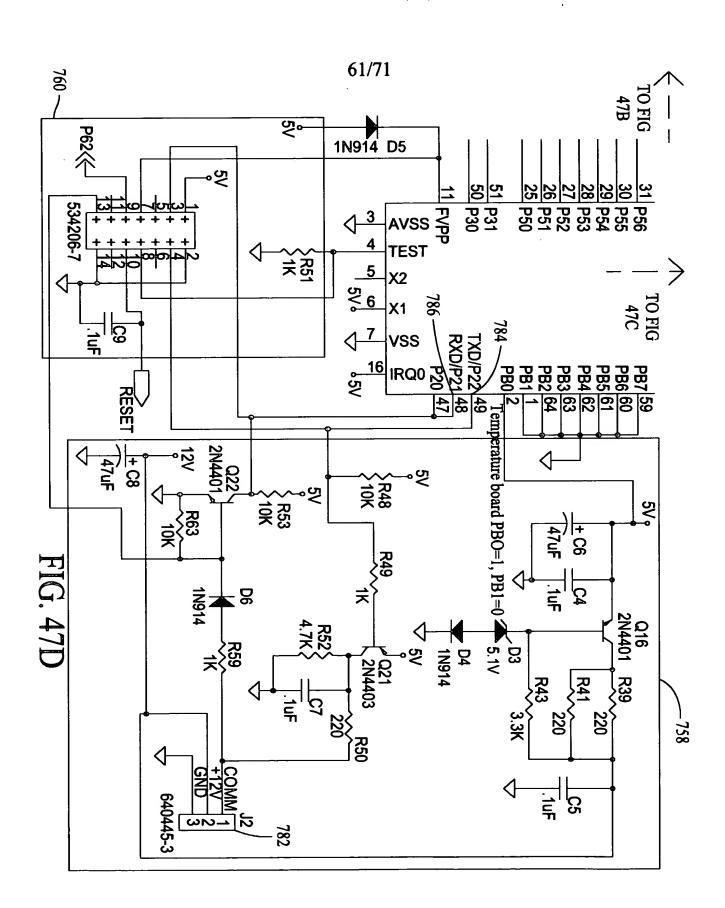
ant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE



licant: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE



Amnt: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. 9D-HR-19406 Fitle: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE



Ap ht: Holmes et al..; S.N. 09/754,600; Atty. Dkt. No. HR-19406 Title: REFRIGERATOR SYSTEM AND SOFTWARE ARCHITECTURE

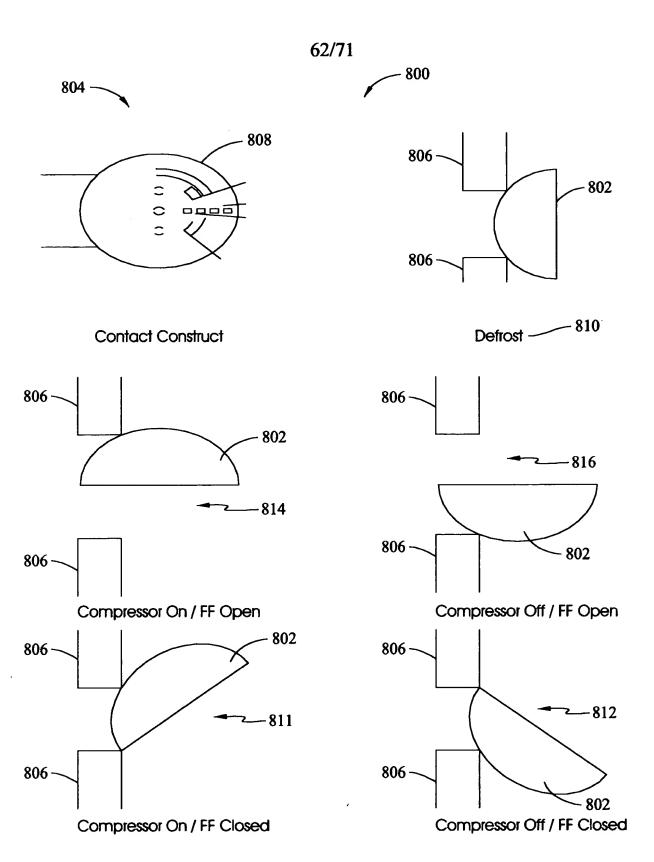
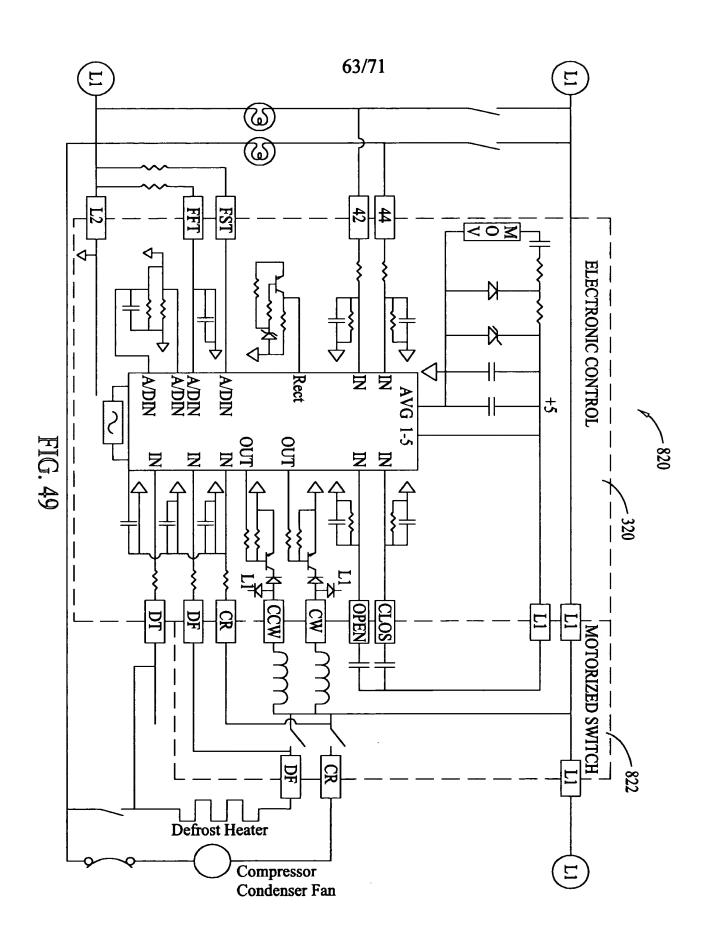
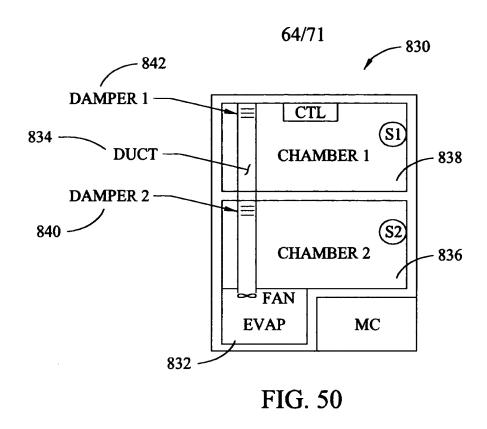


FIG. 48





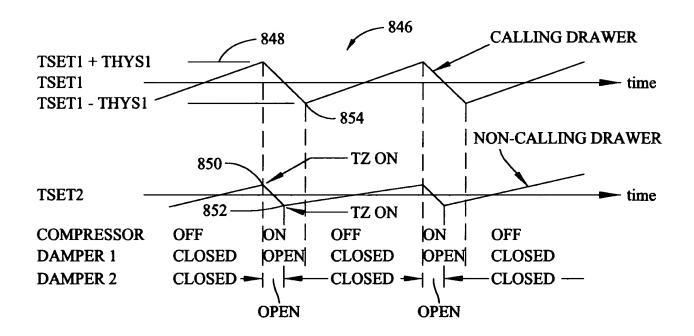
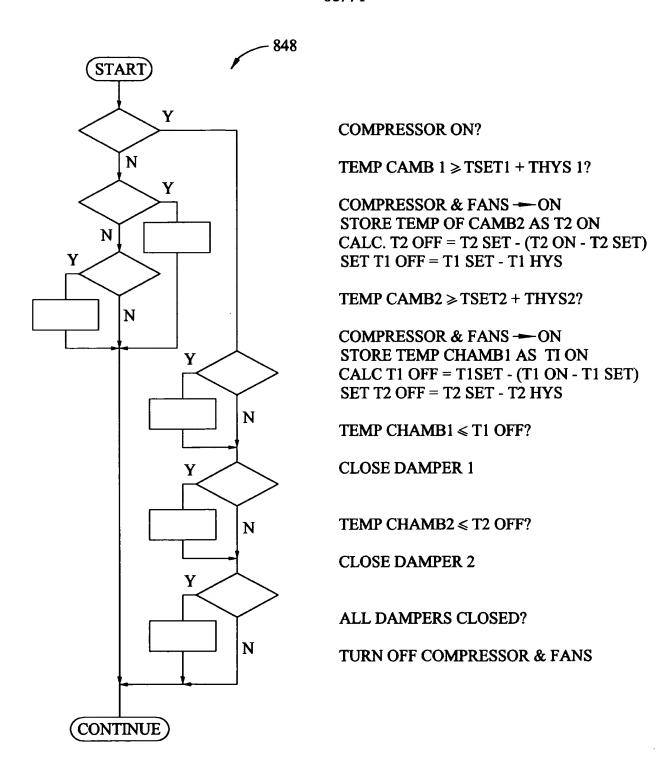
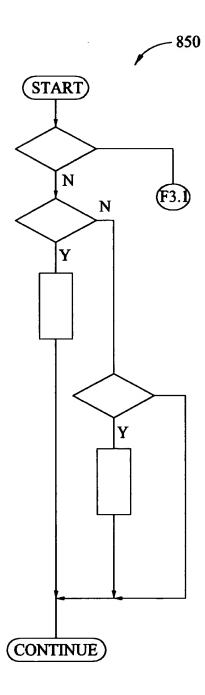


FIG. 51

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COMPRESSOR ON?

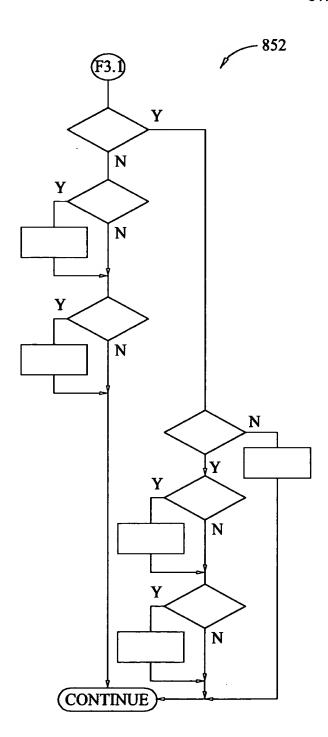
 $T1 \ge T1 MAX$

SET DAMPER FOR EQUAL AIR FLOW TURN COMPRESSOR AND FANS ON SET CONDITION 1 FLAG SET T2 ON = T2 MAX

 $T2 \ge T2 \text{ MAX}$

SET DAMPER TO MAX AIR FLOW TURN COMPRESSOR AND FANS ON SET CONDITION 2 FLAG SET T1 ON = T1

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CONDITION 1 FLAG SET?

 $T2 \le T2 SET - (T2 ON - T2 SET)$?

CLOSE DAMPER

 $T1 \leq T1 MIN?$

TURN COMPRESSOR AND FANS OFF RESET CONDITION 1 FLAG

CONDITION 2 FLAG SET?

ERROR - RESTART COMPUTER

 $T2 \le T2 MIN?$

CLOSE DAMPER

 $T1 \leq T1 \text{ SET} - (T1 \text{ ON} - T1 \text{ SET})?$

TURN COMPRESSOR AND FANS OFF RESET CONDITION 2 FLAG

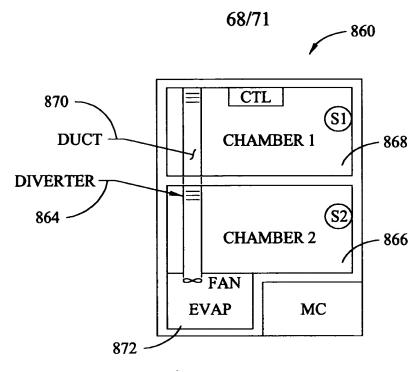


FIG. 55

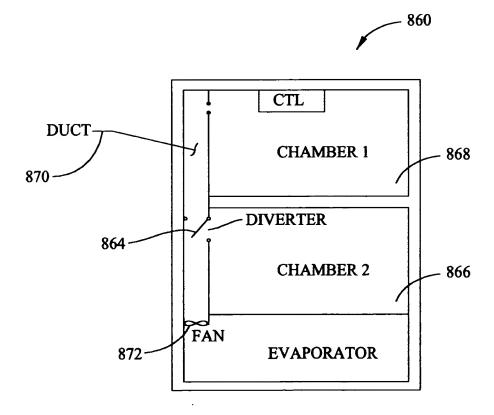
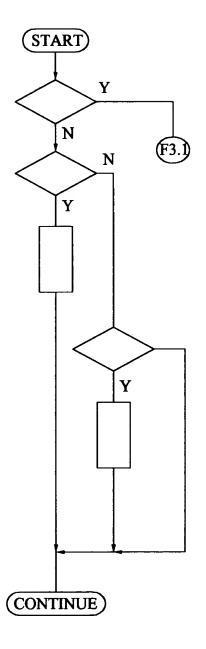


FIG. 56

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COMPRESSOR ON?

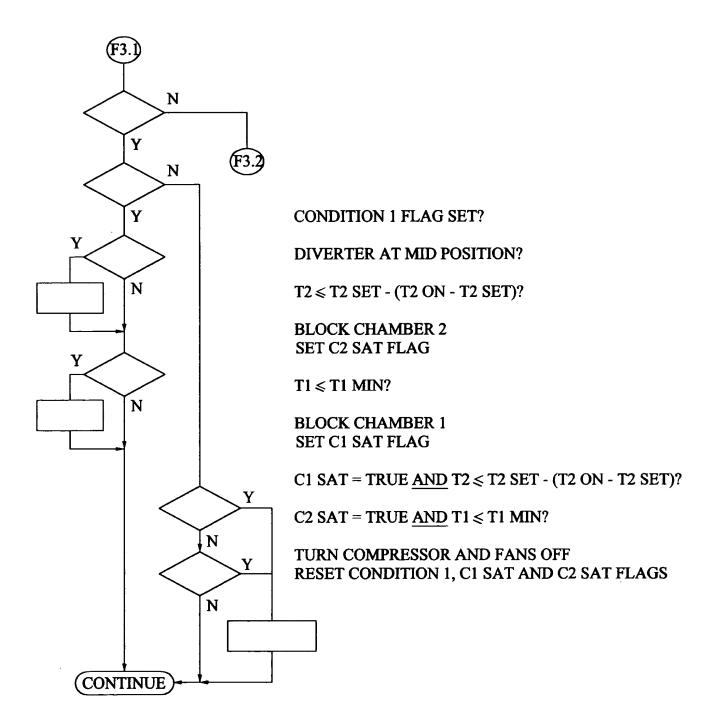
 $T1 \ge T1 MAX$

SET DIVERTER FOR EQUAL AIR FLOW TURN COMPRESSOR AND FANS ON SET CONDITION 1 FLAG SET T2 ON = T2

 $T2 \geqslant T2 MAX$

SET DIVERTER FOR EQUAL AIR FLOW TURN COMPRESSOR AND FANS ON SET CONDITION 2 FLAG SET T1 ON = T1

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